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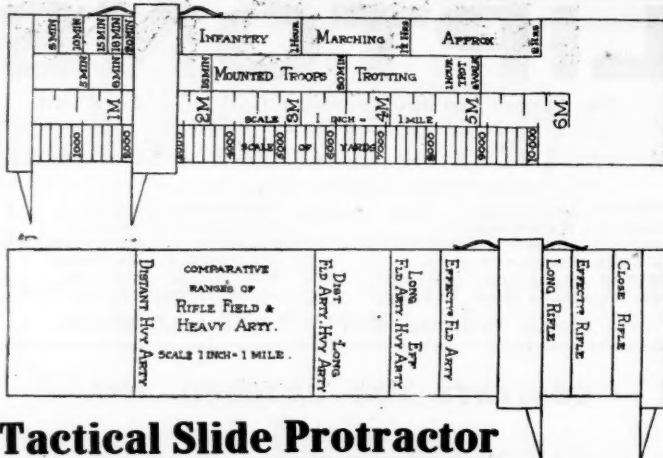
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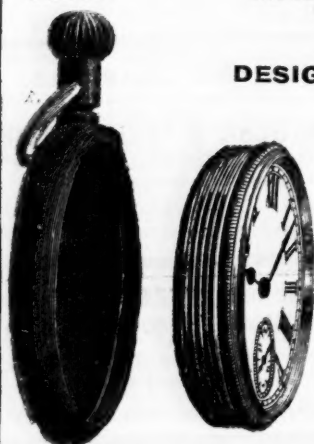
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The attack on the breach of El Moro Castle, Havannah, on the 30th July, 1762. H.M.S. "Alcide" in the foreground. (See page 1264.)
From a print in the Museum of the Royal United Service Institution.

ROYAL UNITED SERVICE INSTITUTION

OCTOBER, 1911

SECRETARY'S NOTES.

I.—OFFICERS JOINED.

The following Officers joined the Institution during the month of September :—

Lieutenant W. R. Phillimore, R.N.

Second-Lieutenant A. G. Murray-Smith, 2nd Life Guards.

Lieutenant R. Viney, R.N.

Lieutenant E. J. W. Abbott, Royal Iniskilling Fusiliers.

Colonel E. S. Bulfin, C.V.O., Commanding Essex Infantry Brigade (T.F.).

Lieutenant G. S. Rowley, Westmoreland and Cumberland Yeomanry.

Second-Lieutenant E. B. Green, Irish Guards.

Second-Lieutenant D. E. Wallace, 2nd Life Guards.

Second-Lieutenant A. Trotter, Coldstream Guards.

II.—TWO EXTRA LECTURES (not included on Lecture Card).

Dr. T. Miller Maguire will deliver a Lecture on Friday, October 27th, 1911, at 3 p.m., on "The Strategical Aspect of the Mediterranean Coasts, an historical study." Brigadier-General H. H. Wilson, C.B., D.S.O., Chairman of the Council, will preside.

Brigadier-General F. I. Maxse, C.B., D.S.O., will deliver a lecture, at a date in December to be notified hereafter, on "Infantry Organization." General Sir John French, G.C.B., &c., Inspector-General of the Forces, will preside.

III.—LIBRARY.

The Annual Inspection by the Library Committee of the Library and Map Room took place last month, and they expressed great pleasure in being able to report to the Council the very excellent condition of this Department. They also drew attention to the work done by Commander W. F. Caborne, C. B., in cataloguing the atlases, and of the general re-arrangement of the Map Room by the staff of the Institution.

IV.—GOLD MEDAL ESSAY, 1911.

The following Essays have been received :

- i. "Suaviter in Modo, fortiter in re."
- ii. "Check Mate."

Members are reminded that all Essays must be received by the Secretary on or before November 15th, 1911.

V.—ARMY PROMOTION LECTURES.

A course of Eight Lectures in Military History on "The Russo-Japanese War from August 25th to October 27th, 1904, inclusive," set for the December Army Promotion Examination, will be given on the following dates, at 4 p.m., the Lecturer being T. Miller Maguire, Esq., LL.D., Barrister-at-Law :—

Tuesday, November 7th.

Friday, November 10th.

Tuesday, November 14th.

Friday, November 17th.

Tuesday, November 21st.

Friday, November 24th.

Tuesday, November 28th.

Friday, December 1st.

The fee for the course of Lectures is one guinea for Members of the Institution, and two guineas for non-Members.

Application to attend, enclosing the fee, to be addressed to the Secretary, Royal United Service Institution, Whitehall, S.W.

VI.—ADDITIONS TO THE MUSEUM.

- (6364). Medal struck in Portugal commemorating the erection of the Bussaco Memorial Column by the Portuguese in 1873.
—Given by Professor C. W. C. Oman, M.A., F.S.A.
- (6366). An Oil Painting of the Battle of Trafalgar, and believed to be one of Stansfield's studies for his famous Picture, now in the United Service Club.
- (6367). A Line Engraving of Prince Eugene of Savoy, from the Picture by Jacques von Schuppen, and engraved by B. Pickart in 1722.—Given by Lieut.-Colonel A. Leetham.

VII.—MUSEUM PURCHASE FUND.

Some Members of the Institution having expressed a wish that a Fund should be opened for the purchase of suitable Exhibits, which are from time to time offered to the Museum, and which are put up for sale at various auctions; the Council have decided that such a Fund should be formed, and hope that it will receive support from Members of the Institution, especially those who are interested in the Museum. Subscriptions and Donations will be acknowledged in these notes, and the manner in which same are used will be duly recorded in the Annual Report.

VIII.—LECTURE: CHANGE OF TITLE.

The title of the lecture which is to be delivered by Captain C. J. Burke, Army Air Battalion, on the 15th November, is: "The **aeroplane** as an aid to the study of existing strategical problems," not "The air-ship," as stated in the lecture card.

NAVAL AND MILITARY CALENDAR.

SEPTEMBER, 1911.

- 4th (Mon.) Review of the French fleet by President Fallières at Toulon.
- 5th (Tues.) Review of the German Fleet by the Kaiser, at Kiel.
- " " H.M.S. "Falmouth" commissioned at Chatham.
- 9th (Sat.) Launch of the first-class battleship "Petropavlovsk" from the Baltic Works, St. Petersburg, for the Russian Navy.
- " " Inauguration of Aerial Mail Service from London to Windsor.
- 11th (Mon.) Tercentenary of the birth of Turenne.
- 20th (Wed.) The new Admiralty Library and Reading Room opened by the first Lord of the Admiralty.
- 22nd (Fri.) Death of Arabi Pacha in Egypt.
- " " Launch of first-class battleship "Jean Bart," from Brest Dockyard.
- 23rd (Sat.) Launch of the first-class battleship "Courbet" from Lorient Dockyard for the French Navy.
- " " Launch of the first-class battleship "Moreno," from the Camden yard, New Jersey, for the Argentine Navy.
- 24th (Sun.) Wreck of the Naval Airship while being launched at Barrow.
- 25th (Mon.) The French first-class battleship "Liberté" blown up in Toulon harbour.
- 28th (Thur.) Arrival of Lord Kitchener at Cairo, on appointment as H.M. Agent and Consul General.
- 29th (Fri.) Declaration of War between Italy and Turkey.

PRINCIPAL ADDITIONS TO LIBRARY.

September, 1911.

Where Do We Come From?—Is Darwin Correct? By Herbert Morse. 8vo. 7s. 6d. (Presented.) (Kegan, Paul, Trench, Trubner & Co., Ltd.) London, 1911.

Naval Tactical Problems. By John White. 8vo. (Presented.) Portsmouth, 1911.

Anglo-Dutch Rivalry during the First Half of the Seventeenth Century. By the Revd. G. Edmundson. 8vo. 6s. (Clarendon Press.) Oxford, 1910.

La France Victorieuse dans la Guerre de Demain. By Colonel Arthur Boucher. 8vo. 1s. (Presented.) (Berger-Levrault.) Paris, 1911.

Draysonia, being an attempt to explain and popularise the System of the Second Rotation of the Earth, as discovered by the late Major-General A. W. Drayson. By Admiral Sir Algernon F. R. De Horsey. 8vo. (Presented.) (Longmans, Green & Co.) London, 1911.

Aventures de Guerre au temps de la République et du Consulat. By M. A. Moreau de Jounès. 2 vols. 8vo. 10s. 6d. (Pagnerre.) Paris, 1858.

The Great Illusion. By Norman Angell. Crown 8vo. 2s. 6d. (William Heinemann.) London, 1911.

History of the XIII. Hussars. By C. R. B. Barrett. 2 vols. 4to. 42s. (Presented.) (William Blackwood & Sons.) Edinburgh, 1911.

Garibaldi and the Making of Italy. By G. M. Trevelyan. 8vo. 7s. 6d. Illustrated. (Presented.) (Longmans, Green & Co.) London, 1911.

Vade-Mecum of Organization and Administration. By Captain J. Demangel. 7th edition. 32mo. 2s. (Presented.) (Forster, Groom & Co., Ltd.) London, 1911.

The Life of Patrick Sarsfield (Earl of Lucan). By John Todhunter. Crown 8vo. 3s. 6d. (T. Fisher Unwin.) London, 1895.

Taktische Studien. By Colonel Balck. 8vo. 1s. 3d. (A. Bath.) Berlin, 1911.

Observations and Proceedings on board His Majesty's Ship "Culloden," Isaac Schomberg, Esq., Captain, in the Actions of the 28th May, 29th May, and 1st of June, 1794, between the British and French Fleets. M. S. Crown 8vo. n.p. 1794.

NOTE ON FRONTISPIECE.

The capture of the Moro fort, at Havannah, in the island of Cuba, was carried out by an expeditionary force comprising some 16,000 troops under General the Earl of Albemarle, with the co-operation of the fleet in the West Indies under Sir George Pocock. The situation of the fort is thus described in Fortescue's "History of the British Army" (Vol. II., page 542).

"The entrance to the harbour of Havanna lies through a channel about two hundred yards wide, which was defended by two forts at its mouth, Fort Moro on the northern shore, and Fort Puntal opposite to it, the town also being situated on the southern shore. On the north side the ground rises rather abruptly from the harbour into a ridge known as the Cavannos, at the end of which stands Fort Moro abutting on the open sea."

The expedition landed a little north of Havannah on the 6th of June, but it was not till July that an effective fire was opened from the batteries, which had been armed with ships' guns. The fleet stood in, and assisted in the bombardment, the "Dragon," "Cambridge," and "Marlborough" suffering severely from the enemy's fire.

The garrison offered a vigorous defence, and on the 21st July attempted a sortie, which was, however, repelled. The losses of the troops from sickness were at this time so heavy that not more than half the men were fit for duty, and 800 marines had to be landed from the fleet to aid in the work.

At length on the 30th July the mine under the counterscarp was sprung, and the troops were launched to the assault. The breach was stormed with trifling loss; some 400 of the enemy were taken prisoners, and 150 are said to have been killed.

The organization of the troops taking part in the expedition is given in Norman's "Battle Honours of the British Army" (1911), as follows:—

First Brigade: Royal Scots; 56th (Essex); 60th (King's Royal Rifles).
Second Brigade: 9th (Norfolks); 27th (Inniskilling Fusiliers), and the 48th (Northhamptons).

Third Brigade: 34th (Border Regiment); 35th (Royal Sussex); 43rd (Oxford Light Infantry), and the 75th (Gordon Highlanders).

Fourth Brigade: 17th (Leicesters); 42nd (Royal Highlanders); 65th (York and Lancaster)—2 companies; 4th (King's Own)—3 companies; 77th (Middlesex)—4 companies.

Fifth Brigade: 22nd (Cheshires); 40th (South Lancashires); 72nd (Seaforths); 90th (Scottish Rifles).

Royal Artillery: 357 men.

NOTE.—The Journal Committee will be glad to receive from members of the R.U.S.I. photographs of places of historical or Imperial interest suitable for reproduction as frontispieces in the JOURNAL. It should be stated in all cases whether any copyright attaches to the photograph sent, and whether its return to the sender is desired.

THE JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

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[Authors alone are responsible for the contents of their respective Papers.]

THE NELSON TOUCH AT TRAFALGAR.

For diagrams see September Journal, pp. 1172-1173.

BY G. WHEATLY COBB.

Continued from page 1180.

On Wednesday, 25th January, 1911.

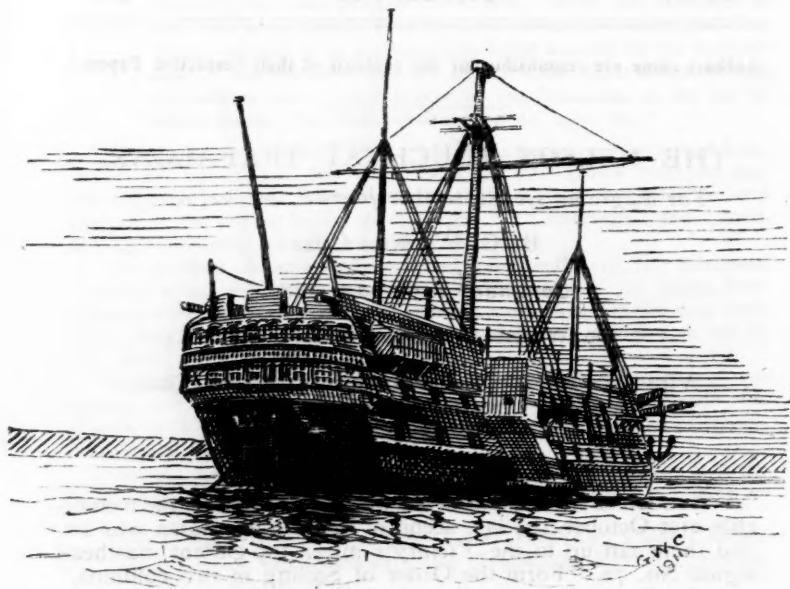
Vice-Admiral A. M. FIELD, F.R.S., in the Chair.

The Advance. Signal 72.

As soon as the curtain of the night was lifted on the memorable 21st October, the last scene of the mighty drama was set, and there ran up to the *Victory's* mizen top-gallant masthead signal No. 72, "Form the Order of Sailing in two columns," and the *Victory* and the *Royal Sovereign* bore up, shook the reefs out of their topsails, and steered E.N.E., that is, for a point astern of the enemy's rear.

The Order of Sailing was, of course, to be formed upon the two flagships. The rear of the line, composed of Collingwood's column, would stand on till each ship had reached the point where the *Royal Sovereign* had turned. The van, which was Nelson's column, would wear and then bear up after the *Victory*. It would be impossible to say that this actually happened were it not that by a fortunate chance Captain Prigny's first diagram shows the movement in progress. Collingwood's ships are bearing up in succession, and Nelson's are wearing. There is a small but interesting confirmation of the correctness of this plan. It shows one ship detached to the eastward of the British rear. This is doubtless the *Colossus*, which has this entry in her log. "Daylight, the enemy's fleet, consisting

"of 33 sail of the line, 4 frigates and 2 brigs, on the starboard tack E.S.E. 6 miles. Our fleet on the weather bow." This entry, it may be observed in passing, is useful as determining the relative positions of the fleets when Nelson began his advance. It shows that the British fleet was astern of the enemy, and proves that the lines representing it in Nelson's diagram must be lines ahead, because lines abreast, starting from such a position, could never have fetched the enemy.



"The Duguay Trouin now graces the waters of the Hamoaze."
(*H.M.S. Implacable, the last survivor of the Allied Fleet at Trafalgar.*)

Signal 76.

If the enemy had continued on the starboard tack it appears certain that no other signal affecting the formation of the fleet would have been made by Nelson. The line ahead would have drawn out from its centre into the two columns of the Order of Sailing. The whole fleet would then have been swung round, describing a wide quarter of a circle, whose radius was the distance between the fleets, until it became parallel with the enemy's rear and produced the position shown in Nelson's

diagram, but on the opposite tack. The *Victory* and *Royal Sovereign* would have changed places in their respective columns, the advanced squadron would have attached itself to the lee column, and the attack would have proceeded exactly as laid down in the Memorandum. But all this would have meant that Villeneuve was playing into Nelson's hand. If, after the British fleet had assumed the Order of Sailing and had got well advanced upon the course described, the enemy wore and reversed his order, there would have been no alternative but for the lee column to attack the van. It was now that Nelson put into execution the idea that had occurred to him since the issue of the Memorandum, an idea which carried the original design a step further, and made signal 76 with compass signal E.N.E. "Bear up and sail large E.N.E."

It has been hotly debated whether this signal was an order to bear up in succession or together. Mr. Corbett, whose knowledge of the signal books is probably unequalled, declares that it meant in succession, that is, that each ship was to proceed to the spot where her leader had altered course before she altered course herself. It is clear that the term "in succession" was somewhat vaguely used. Nelson wrote that the enemy wore "in succession" when he meant what we now know as wearing together. There are three reasons which compel us to differ from Mr. Corbett and to believe that this signal was an order to bear up together, that is, that each ship should turn immediately and steer independently on the course pointed out.

First, it must be remembered that the flagships were leading, and therefore No. 72 was, in effect, an order to bear up in succession. A second order to the same effect would be superfluous.

Secondly, as the flagships were leading, there was no need for a compass signal if No. 76 was an order to bear up in succession. Hoisted without a compass signal, the signal meant "Bear up and sail large on the course steered by the admiral." With the flagships at the heads of the columns and shaping the course, the addition of the compass signal could only mean that the ships were to steer independently on the course indicated.

Thirdly, whatever was the meaning of the signal, there is no doubt that its effect was to cause the ships to bear up together, and to resolve the fleet into the order shown in Magendie's first plan, namely, a single line abreast with the centre advanced and forming a loop or bight.

It will be observed that this signal did not annul No. 72. Its effect was to cut off corners and allow the ships to join the forming columns by the shortest route. Above all, it made the process of forming the columns identical in both divisions. Instead of the van having to wear, and then proceed on the opposite tack to the turning point, the whole line executed the same manœuvre and bore up at the same time. The effect of No. 72 would have been to draw the columns out, as it were

through a ring in the centre. No. 76 did not arrest the process, but merely took off the ring. The result was that the bight in the centre of the long line abreast gradually drew out, and the columns from being end to end formed a wide angle with each other, which constantly tended to become more acute, till ultimately the sides would become parallel.

The nature of this movement, as well as its object, is clearly shown in the first two *Naval Chronicle* diagrams. The two divisions form a very much extended V with the point missing, or, as the lines curve, it may, perhaps, be better described as the conventional figure representing a flying bird, but with the body omitted. The object of the formation is sufficiently obvious. The two groups are each a lee column, one disposed for the port, and the other for the starboard attack. The effect of the signal was to delay the moment at which the function of each column became determined till it was too late for the enemy to wear. Villeneuve was thus held in a vice from which there was no escape short of actual flight. The parry was in its turn effectually parried.

The *Naval Chronicle* diagrams indicate plainly how the movements of the allied fleet were followed by the British divisions. In the first one Collingwood is heading east, and is about to turn south, so as to bring his column parallel with the enemy and to windward of Nelson on the starboard tack, while Nelson's column is preparing to act as lee column on the same tack. In the second this movement has been arrested. The flagships are beginning to advance perpendicularly, and the following ships are edging in astern of them. The enemy is wearing, and Collingwood's column is preparing to act as lee line.

The second diagram shows that there was one weak point in these tactics which could not be remedied. Though the columns were equally well placed for advancing on either tack, the fleet as a whole was not. When the advance began it had been astern of the enemy. The wearing of Villeneuve brought it about opposite to his centre. It ought to have been astern of his new rear, but under the circumstances it could not be. The advance, therefore, had to be more or less perpendicular. Admiral Colomb estimates that the process of wearing involved a run of five miles or more before the allied fleet was formed on the new tack. This, of course, was all in favour of Nelson, but the distance was not enough to carry the enemy as far to the north of the British Fleet as he had been to the south when Nelson bore up. If the allies had been carrying more sail, and had had more way, the British position would have constantly tended to improve, but Villeneuve took care to retain his advantage, and kept his yards nearly square. He practically lay to. It was one of the chances that in sea warfare so often neutralise the most careful prevision that he lost as much as he gained by being stationary. The heavy swell which

came up from the west must have made his ships roll badly, and have spoiled the aim of his gunners, and it was probably due to this that the leading British ships did not suffer a greater loss from the fire of so formidable a line.

It was doubtless because it compelled a perpendicular advance rather than because it brought Cadiz under their lee that Nelson regretted the wearing of the allies. He would have preferred that they should have shown signs of returning to port. That would have suited his tactics better than their remaining stationary. "He kept saying to Blackwood," says Mr. Corbett, "that they put a good face on it," but always added quickly: 'I'll give them such a dressing as they never had before.'" Although Nelson had in the Memorandum expressly contemplated that the enemy would wear, and although a reversal of course was the obvious and recognised parry to his mode of attack, yet in the actual circumstances he seems to have concluded that Villeneuve would hold on his course, and was surprised that he did not do so. The explanation probably is that, though the tactical reasons were in favour of his wearing, the strategic reasons were against it. If Villeneuve had wanted to avoid fighting he would have kept on the starboard tack with a view to passing the Straits, and this is what Nelson expected. "At present," he had written to Collingwood on the 10th October, "I am sure Mediterranean is their destination." It seems probable that Nelson was not wholly free from that weakness of his countrymen, which leads them to underestimate both the resolution and the skill of their opponents. May his successors have as much reason for their faith as he had.

Signals 42 and 88.

The perpendicularity of the advance was, as we have seen, a matter of small moment to the weather column, but it was likely to have a serious effect upon the lee column. The ships were edging in towards Collingwood's wake in obedience to Nelson's first signal, and the position of the column was becoming more nearly perpendicular. This movement, which would have been perfectly right if the enemy had been further advanced upon his course, had, under the existing circumstances, to be corrected, and Collingwood, therefore, made signal No. 42 for larboard line of bearing. The effect of this was to maintain the formation produced by Nelson's No. 76, as far as the lee column was concerned, to prevent the left arm of the V from becoming vertical, and to cause the ships to steer for their opponents in the enemy's line instead of closing in on Collingwood. The signal was accompanied by No. 88. "Make more sail." The fact that these two signals were made together leaves little doubt that Collingwood in making them was carrying out the direction of the Memorandum: "The signal will most probably then be made for the lee line to

"bear up together, to set all their sails, even steering sails, 'in order to get as quickly as possible to the enemy's line.'"

As usual, this evidence that the Memorandum was being carried out has been seized upon as proof that it was disregarded. "Collingwood," says Mr. Corbett, "signalled the lee division 'to form the larboard line of bearing,' thereby actually 'overriding Nelson's signal for the Order of Sailing,' and he quotes the logs of the *Téméraire* and *Defence* to show that the signal was made as early as 8.45 instead of at 11 as noted by the *Royal Sovereign*. Collingwood, who must be presumed to be the best authority, says it was made after the signal to *Tonnant* and *Belleisle* to change places, which latter *Belleisle* says was made at 9.20. As we have seen, Nelson had himself overridden his signal for Order of Sailing, that is, he had modified the relative position of the columns by No. 76. He could do no more till Villeneuve had shown his hand. As soon as it had become clear on which tack Villeneuve would fight, the functions of the two British columns would be determined. Then, assuming the British fleet to be opposite his centre, it is clear that the lee column would have to form line of bearing—that is, would have to retain the form into which No. 76 had thrown it, so as to become as nearly as possible parallel to the enemy's line, while the ships of the weather column would continue the process of edging in to their flagship's wake, so as to become perpendicular to the enemy's line. The reason for the signal for line of bearing being made so much sooner than the signal to bear up contemplated by the Memorandum is evident. Villeneuve's change of course had brought the British fleet opposite his centre too soon, and while they were still some miles distant, instead of, as they should have been, nearly within gunshot. If, when Villeneuve had finished wearing, the British fleet had been as far astern of the new rear as it had been of the old rear it is certain that Nos. 76 and 42 would not have been made. Nelson saw at 7 that the enemy was wearing. The only ship that gives a time is the *Spartiate*, who notes: "8.55 the enemy's fleet wore." The evolution was certainly not completed before 10. Probably, therefore, *Téméraire* and *Defence* are correct in giving 8.45 as the time when Collingwood hoisted No. 42. It is clear that 76, 42 and 88 form a perfectly connected series, all designed to carry out the same object.

The question as to the moment when the second in command was to assume "the entire management of the lee line" need not detain us. It was to be "after the intentions of the 'Commander-in-Chief is signified.'" The intentions of Nelson, it need hardly be said, depended on those of Villeneuve. As soon as it became clear on which tack Villeneuve meant to await the onset, Collingwood knew which line he had to command and what it had to do.

How nearly Collingwood succeeded in getting his column parallel to the enemy's line it is difficult to determine. Notwithstanding the lightness of the wind and the slow rate of

sailing, seven ships were in action 20 minutes after the *Royal Sovereign* opened fire. A useful entry is that of the *Colossus*, who states that she was receiving a galling fire from the enemy's rear and began firing her starboard guns twenty minutes after the *Sovereign* commenced action, and ten minutes before she herself passed through the enemy's line.

The ninth ship to get into action, the *Dreadnought*, does not claim to have opened fire till an hour after the *Royal Sovereign* broke the line. This does not necessarily prove that the rear of the column was out of its proper position. The *Dreadnought*, *Polyphemus*, *Swiftsure*, *Defiance*, *Defence*, *Thunderer* and *Prince* all engaged ships of the Escadre d'Observation under Gravina. If this squadron is rightly placed in the *Naval Chronicle* plan, the ships engaging it had considerably further to go than the others. In the extremely interesting Spanish plan given by Mr. Thursfield some of the British ships are shown passing round the allied rear to attack this squadron.

That the position of the column shown in Mr. Newbolt's plan is fairly correct is confirmed by the view of the column going into action shown on the Trafalgar medal struck at the expense of Mr. Bolton, Nelson's brother-in-law.

The Courses of the Flagships.

Although the *Royal Sovereign* was in action for almost twenty minutes before the *Belleisle*, her next astern, cut the line, it seems clear that she herself did not pass through the line more than five minutes before the following ship. Collingwood's journal and the log of the *Mars* describe the *Sovereign*, *Mars*, *Belleisle* and *Tonnant* as breaking the line almost simultaneously, and the *Euryalus* confirms them. There is an interesting but puzzling passage in Collingwood's journal describing this phase of the attack: "About noon," he writes, "the *Royal Sovereign* opened a fire on the 12th, 13th, 14th and 15th ships from the enemy's rear, and stood on with all sail "to break the enemy's line. Quarter past 12 altered course to "port, and in passing under the stern of the *Santa Ana*, a "Spanish three-deck ship with a Vice-Admiral's flag, raked "her, and sheering up on her starboard quarter, began a very "close action. At this time the *Mars*, *Tonnant* and *Belleisle* "had just passed through the enemy's line." This apparently can only mean that the *Royal Sovereign* steered for a point four ships ahead of that at which she meant to break the line, then turned to starboard, passed along the line, firing her port guns at the four ships (which should be named in reverse order) and finally turned to port and passed through the line astern of the *Ana*.

What was the object of this manœuvre? Was it to give time for the ships on her quarter to come up and break the line as nearly as possible simultaneously? Or was it to avoid a "mad perpendicular attack"? The latter is suggested by the

fact that the *Victory* did exactly the same thing. James quotes an entry in the log of the *Polyphemus* (which, however, is not in the log given by Admiral Sturges Jackson) that the guns first fired by the *Victory* were on her starboard side. Sir E. Codrington, in a letter quoted by Nicolas, says: "I have no doubt of the *Victory* having hauled out to port for a short space." The rest of the movement is given in the *Orion's* journal. "The *Victory*, after making a feint of attacking their van hauled to starboard, so as to reach their centre, and then wore round to pass under the lee of the *Bucentaure*." Mr. Fraser quotes a Spanish account by a spectator on board the *Santissima Trinidad*. "The *Victory* fired first on the *Redoutable*, and, being repulsed, she came up to windward of the *Trinidad*. The moment had come for us. A hundred voices shouted 'Fire,' loudly re-echoing the word of command, and fifty round shot were hurled at the side of the English man-of-war. For a moment I could see nothing of the enemy for the smoke, while they, as if blinded with rage, came straight down on us before the wind. Just within pistol shot they put the *Victory* about and gave us a broadside." The *Victory's* own log has this entry: "At 4 minutes past 12 opened our fire on the enemy's van in passing down the line." James' account of the enemy's fire on the *Victory* as she went into action shows that she cannot have been end-on to their line. "Just as she got within about 500 yards of the larboard beam of the *Bucentaure* the *Victory's* mizen topmast was shot away. A shot also struck and knocked to pieces the wheel. Scarcely had two minutes elapsed before a double-headed shot killed eight marines on the poop and wounded several others. Presently a shot that had come through a thickness of four hammocks near the larboard chess-tree and had carried away a part of the larboard quarter of the launch as she lay on the booms, struck the fore brace bitts on the quarter-deck and passed between Lord Nelson and Captain Hardy." The ship that fired this shot must have been forward of the *Victory's* port beam.

It is interesting to note that the turn to port of the two flagships brought them into the exact positions of the heads of the columns in Nelson's diagram. If the two columns had been on the same course astern, the diagram would have been reproduced exactly. In the diagram, as in the battle, the two flagships are well in advance of the points where they were to pass through the enemy's line.

Nelson's Attack.

This movement on the part of the *Victory* was, as we have seen, described in the *Orion's* log as a feint on the van. It is not necessary to assume that the manœuvre was the outcome of any such intention, because there were other reasons for it, and, as has been seen, Collingwood did the same thing. There are, however, grounds for supposing that Nelson did for a

short time entertain the idea of making a serious attack on the van with his column. Admiral Dumanoir, in a letter to the *Times* of 2nd November, 1806, quoted by Mr. Fraser in "The Enemy at Trafalgar" (p. 235), says:—"The left column of the English, having Admiral Nelson at its head, bore first on the French vanguard, which I commanded, but finding it too compact, they exchanged some shots with us, and then struck at the centre of our line." In a letter to Decrès, quoted by Mr. Thursfield ("Nelson and other Studies," p. 66), Dumanoir is even more explicit. "Au commencement du combat la colonne du Nord se dirigea sur l'avant garde, qui engagea avec elle pendant quarante minutes." "Forty minutes" is doubtless an exaggeration intended to account for Dumanoir's inaction. The log of the *Euryalus* contains the following entry:—"At 11.40 repeated Lord Nelson's telegraphic message. 'I intend to push or go through the end of the enemy's line to prevent them from getting into Cadiz.'" It is difficult to account for the fact that this signal is not recorded by any other ship, but it is more difficult to believe that *Euryalus* logged a signal not made or mistook its meaning. The signal is of especial interest in connection with the explanation of the plan of attack here presented, because, if the latter is correct, it shows how very strong must have been the inducement to such a course, and makes it almost certain that the idea of taking it did occur to Nelson. We have seen how the weather column was originally the lee column for the starboard attack, and, as Mr. Newbolt's plan shows, it retained to the last strong traces of its original destination. The curve of the enemy's van brought it to a very small angle with the lie of the column, and if the British ships had altered course to port together, and had formed a starboard line of bearing, the head at least of the column could have engaged it almost simultaneously, and all the ships would have got into action sooner than by heading for the enemy's centre. Whether the signal taken in by *Euryalus* had been made or not, we may be sure that the situation must have seemed to Nelson to cry aloud to him to crush the van as Collingwood was crushing the rear. That would have been a triumph indeed. It would have invested a victory with the overwhelming completeness of the Nile. It was annihilation that England wanted. But numbers only could annihilate, and he was six line-of-battle ships short of equality. To attack the van would mean leaving the centre and the Commander-in-Chief unengaged and free to turn upon either British column, and Collingwood already had his hands more than full. Above all, he had laid it down in the Memorandum that every effort was to be made to capture Villeneuve, and he had promised to endeavour to take care that the movements of Collingwood should be as little interrupted as possible. So no signal to the column was made, and it pursued its course, leaving the van unengaged. If Nelson had ever

meant to throw over the Memorandum he would have done so then. That he did not do so, under so strong a temptation, in this instance, is the best proof that he did not in any other.

It is probably due to this resolve of Nelson to adhere to his original intention that the *Duguay Trouin* now graces the waters of the Hamoaze. If he had engaged the van, she would probably have been taken, but would have shared the fate of so many of the other prizes.

Other Signals.

Reference should here be made to a signal which it seems impossible to reconcile with the recorded circumstances or with the view that Nelson ever intended to use the weather column for an attack on the van. According to Admiral Colomb, the *Téméraire's* signal log, which is not included in Admiral Sturges Jackson's series, records that "about eight o'clock the *Victory* "made the signal 50, an order to maintain the larboard line "of bearing, though the ships were on the starboard tack." The log of the *Agamemnon* has an entry with no note of time, "Answered No. 50 general." Admiral Jackson notes as follows: "This is evidently a mistake. No. 50 is not mentioned in any other log." He was clearly not aware that *Téméraire* had made a similar entry. Mr. Corbett, in "Fighting Instructions," Vol. II., p. 311, says this was Collingwood's signal to his column to form line of bearing, and that *Agamemnon* answered it under the impression that it was general. But an order from the *Royal Sovereign* could not have been general, and this explanation does not account for *Téméraire's* statement that it was made by the *Victory*. It must be remembered that at eight o'clock the wind was west. It was, therefore, impossible for ships steering E.N.E. to be on the starboard tack.

If Nelson meant to threaten the enemy's van, or if he had thought Villeneuve might wear again and get on the starboard tack, we should expect him to have directed his column to maintain the starboard line of bearing, which No. 76 had produced, but it is extremely improbable that two ships should have recorded larboard when starboard was intended. A signal to form larboard line of bearing is conceivable, though not probable, but one to maintain it (which implies that it had already been formed) is inexplicable. The larboard line of bearing might possibly have been ordered two hours later with the object of bringing the weather column more nearly parallel with the lee line, and the wind having by then shifted slightly to the south, the ships might possibly have been described as on the starboard tack, but it would have seriously delayed the rear ships, and we know that Nelson had sent them urgent instructions to get into action as quickly as possible. Unless we throw over the *Naval Chronicle* plans, we must affirm that the weather

column began its advance in something like a starboard line of bearing, which afterwards fell into an irregular line ahead. Sir J. K. Laughton, in a note referring to another signal, says:—"This is only one of the many signals casually reported which there is no reason to believe were really made." This is an unsatisfactory way of evading the difficulty, the more so as in each case the signal is reported by two ships. If the signal had been made to the lee column it would be entirely intelligible, and what we should expect, except that the ships could not be described as being on the starboard tack.

Two signals remain to be considered. They are of importance because they are held to confirm the theory that Nelson and Collingwood were at variance as they went into action.

The Signal to the Mars.

As we have seen, Mr. Corbett thinks that in signalling to his column to form line of bearing, Collingwood was overriding Nelson's orders, and he tells us that Nelson "did not accept Collingwood's assumption of control with entire docility. He presently began interfering with his line by ordering *Mars* to take station astern of the *Royal Sovereign*. . . . At last he carried his authority so far as to signal *Mars* actually to lead the lee line."

The first signal, for *Mars* to take station astern of the *Royal Sovereign*, is apparently only given in the master's signal log of the *Téméraire*, which, as has been said, is not given by Admiral Sturges Jackson, and we are not given the time. It is not noticed in the log of the *Mars*, though she gives the second "At 10.5 answered signal from the *Victory* for the *Mars* to lead the lee division."

It has been shown what strong grounds there are for believing that *Mars* was the senior ship of the advanced squadron which, the Memorandum had stated, would always make a line of so many sail "on whichever line the Commander-in-Chief may direct." This squadron was, therefore, under the immediate orders of Nelson, and it was no interference with Collingwood's "entire management of the lee line" that Nelson should signal to it directly. At 10 o'clock it was perfectly clear on which tack Villeneuve would fight, and which was to be the British lee column. It is, therefore, just what we should expect that Nelson should signal *Mars* to follow Collingwood, although it is quite probable that the three captains knew what they had to do without further instructions. The signal, so far from showing that Nelson was going outside the Memorandum, is an additional proof that he was adhering to it.

The second signal is more difficult to account for. It is one of those which Sir J. K. Laughton considers were not really made, but as it is logged by three ships (*Mars*, *Conqueror*, and *Orion*) this is scarcely probable. *Orion*'s entry may afford a clue. "At fifteen minutes past noon" (the variations of time are extraordinary) "the general signal to engage more

"closely. The *Victory* made the *Leviathan's* signal to lead the "van, and the *Mars* to lead the lee line." This entry and its association with No. 16 suggest that the two signals were a "fillip" to two especially smart ships, a spur to additional effort, just as No. 16 was to the fleet generally. No ship, however closely she was engaged, was to think she was doing enough so long as No. 16 flew from the *Victory's* main top-gallant masthead, and *Mars* and *Leviathan* were to be inspired by the consciousness that they had Nelson's special permission and order to be first—if they could.

The two signals may, however, have had a more prosaic object. Nelson may have felt that there was a strong probability that the leading ships might be dismasted before passing through the enemy's line, and intended to give instructions to two of the most capable captains to assume, in that event, the leadership of the columns.

The Course of the Prince.

The best test of any theory of the advance is to see how far it is confirmed by and is consistent with the movements of individual ships. The log of the *Prince* is most useful for this purpose, as her conduct was exceptional, and is minutely described.

"At daylight," it runs "saw the enemy's combined fleets "to the eastward, consisting of 33 of the line as well as "several frigates. Bore up per signal, with the fleet steering "for the centre of the enemy. Answered our signal to take "station as most convenient. Fleet formed order of sailing; "hauled to port to give room for the lines to form. Answered "signal to bear up. At eight o'clock set main topmast steering sails and all sail. Steering down for the enemy which "had formed the line to receive us. Answered signal for close "action. Steering down between the lines with all sail set."

The *Prince* was one of the lee column, that is, she was in the rear half of the line ahead when it was on the port tack at dawn. She bore up after her flagship in obedience to the signal to form Order of Sailing, and then, finding that other ships were crowding as they turned to starboard, she hauled to port, that is, to the wind on her original course. This at once took her out of the column, and brought her into the space between it and the weather column. After No. 76 was made all the ships to the rear of both columns bore up together, the space between the columns became wider, and the *Prince* alone in the middle became a conspicuous object from the *Victory*, who thereupon ordered her to bear up. She bore up accordingly, but instead of being in her proper station at the head of her column, she now found herself between the columns to the rear of the line of bearing, and further than any of her consorts from the enemy. She was consequently the last ship of her division to get into action. It will be seen that these

movements of the *Prince* are not only consistent with, but actually elucidate the *Naval Chronicle* plans. If, on the other hand, we assume with Admiral Colomb that the British columns were lines abreast, one astern of the other, the movements of the *Prince* become not only unintelligible, but impossible.

Villeneuve's Tactics.

Such was the attack at Trafalgar as viewed by non-professional eyes at the distance of a century. There are doubtless many objections to the acceptance of this solution which I have overlooked. If there were not, it is inconceivable that it should not have been adopted earlier. If, however, it is rejected, I feel sure that the true explanation of the Nelson Touch is still to seek.

It has at least one element of truth. It leaves the fame of Nelson unsullied.

If it is conceded that the battle was fought on a tactical plan, and that the plan was that of the Memorandum, it is clear that we must revise our estimate of the tactical ability not only of Nelson, but of his opponent. We have it on record that one of Nelson's objects was to "surprise and confound the "enemy. They won't know what I am about." It is certain that Villeneuve knew perfectly well what Nelson was about, although Nelson's own captains did not. When the British fleet bore up at dawn and formed a single line abreast, there was nothing to show that it was going to deploy into two columns. The only indication of Nelson's intentions was the position of the fleet. It was astern of Villeneuve's rear. That was evidently the position the British Commander-in-Chief desired. Villeneuve at once signalled his fleet to wear, with the object of putting Nelson ahead of his van, which was just where he did not want to be. Having thus won the first move, the French admiral lay to and awaited the perpendicular attack which he had forced upon Nelson.

It is quite certain that the wearing of Villeneuve was a tactical move, and was not the result of a desire to get Cadiz under his lee. Mr. John Leyland, writing in the *Times* of 14th October, 1905, says that in a despatch to Napoleon describing the action with Calder, Villeneuve states that he had noticed the intention of the British admiral to close upon his rear, and had ordered his ships to wear together in order to defeat the purpose. In the same letter Mr. Leyland says that in writing to Decrès on 6th August, Villeneuve complained of the French tactics, which he said were out of date, and that the officers knew only how to form the fleet in line, which was exactly what his adversaries desired, and that he had not the means, nor the time, nor the possibility of adopting other tactical formations.

Other Solutions of the Problem.

It now only remains to say a few words on the alternative solutions of the problem of the attack which have been suggested.

Any successful explanation must satisfy the following conditions:—

1. It must be possible.
2. It must be probable; that is, it must seem a reasonable way of attaining Nelson's object.
3. It must work equally well with the enemy on either tack.
4. It must be in accord with the Memorandum.
5. It must not be inconsistent with the facts as recorded by eye-witnesses, with the principal signals known to have been made, and with the authoritative diagrams.
6. It must account for the impression received by many of the combatants that the Memorandum was departed from in that it prescribed an advance in a single line abreast, and that this was actually formed, but was not maintained.
7. It must explain the enthusiasm with which, according to Nelson, it was received by the captains. It must warrant their characterisation of it as new, simple, and certain to succeed.

As far as I know, only two of the modern critics have embodied their views of the early stages of the advance in diagrams. These are the late Vice-Admiral P. H. Colomb and Admiral Sir Cyprian Bridge. They both take the same view, but the diagram of Sir C. Bridge is the most particular and elaborate. With great respect for so high an authority, I am bound to say that it fails to pass the test of any one of the above conditions.

1. In the first place, is it possible? We see two lines abreast, one astern of the other, formed soon after 6 a.m., when the enemy's fleet was 10 or 12 miles distant, and we are to assume that Nelson expected that this formation would be maintained till action was joined. It is clear that this would only have been possible if the enemy had remained stationary, or if the British Fleet had commenced its advance from a point ahead of it, and if Nelson had been able to foresee and steer for the point which it would occupy when he arrived up with it. A line abreast can only remain a line abreast while its course is perpendicular to the enemy. With a moving enemy, lines formed so much too soon would, even if the ships had kept station, have had an inevitable tendency to become lines of bearing and ultimately lines ahead according to the pace at which the enemy was moving. (Admiral Colomb says that when the enemy tacked there was a run of five miles or

more before the new line of battle could be formed.) This, of course, applies to a single line abreast as well as a double one, but the latter has peculiar difficulties of its own. With a number of unequally sailing ships it would have been impossible to maintain the formation with accuracy, and ships dropping out of the leading line would have got mixed up with the rear line, and have caused confusion. It was Nelson's object to get into action as quickly as possible. A line abreast is tied to the speed of the slowest ship. In a line ahead the swiftest ships can lead, and the slower ones can fall astern without destroying the formation. It will be remembered that Captain Moorsom, of the *Revenge*, writes:—"All our ships were carrying studding sails, and many bad sailers a long way astern, but little or no stop was made for them." What sort of a double line abreast would it be of which this could be said?

2. Both Admiral Colomb and Sir C. Bridge show the weather column in line ahead at the last stage of the advance, and the lee column in a line of bearing approximating to a line ahead. Is it probable that Nelson, if he had wished to make the actual attack in the order shown, would have commenced his advance in so awkward a formation as a double line abreast? What possible object could be served by such a formation that would not be equally attained by lines ahead? If the lines were intended to arrive as lines ahead, why take the trouble to make them start as lines abreast?

3. Is at once fatal to the diagrams of both Admirals. It is easy to draw a diagram which ignores the impossibilities already alluded to. But the impossibility of the line abreast theory if the enemy reversed his course is manifest even on paper. Sir C. Bridge marks the "Enemy's formation and position when sighted from the *Victory*," showing the allied fleet on the starboard tack. It is obvious that if the British fleet in the formation shown had engaged them on this tack, the *Royal Sovereign* would have been the last of her line, and the *Victory* the very last of the fleet, to get into action.

4. As has been said, there is nothing in the Memorandum to show that the lines in the diagram are lines abreast. There is everything to show that they are lines ahead. If they are lines abreast the statement that the lee column would be ordered to bear up together is meaningless, while if it be argued that it had already executed that order, then the weather column has done the same, for it cannot be contended that one line represents a line abreast and the other a line ahead. Admiral Colomb says "the order of the 9th October was carried out "except that Nelson bore up earlier than he had intended." Where is the evidence that Nelson ever intended to bear up? The signal for the whole fleet to bear up in the early morning had, as we have seen, nothing whatever to do with the forecast of the Memorandum that the lee column, when nearly within

gunshot of the enemy, would be ordered to bear up together in order that each ship might pass through the line in her proper place. This object was fulfilled by Collingwood's order to form line of bearing.

5. As to this, it is only necessary to repeat that the first signal in the morning was to form the Order of Sailing in two columns, and that eye-witnesses speak of two columns led by the *Victory* and *Royal Sovereign*. The assumption that "columns" means lines abreast is quite untenable. The entry in the log of the *Mars* is typical: "Fleet formed in order of sailing in two columns. The van led by the *Victory*, "Vice-Admiral Lord Nelson, and the rear led by the *Royal Sovereign*, under the command of Vice-Admiral Collingwood, "bore up in order to attack the enemy." It is true that van and rear were arbitrary turns derived from the old line-of-battle, but, however bound by usage, the writer would hardly have described the *Victory* as leading the van when she was really at one end of the rearmost of two lines abreast.

6. Is obviously not fulfilled by the diagrams of the Admirals. A double line abreast could not be mistaken for a single one.

7. The general plan of action for cutting off and overwhelming the enemy's rear by means of two columns might warrant the epithets of new and simple, but it could not be said to be certain to succeed, because it was liable to be thrown out by the enemy reversing his course. The last quality belongs to the disposition shown in the *Naval Chronicle* plan and to it only. It was, I venture to think, entirely new, and yet it was a simple development of old tactics. Admiral Colomb's plan was new, but it was not simple, because it was difficult to execute, nor certain to succeed, because it was liable to be thrown out by the wearing of the enemy.

Sir John Knox Laughton, in an essay contributed to the *Quarterly Review* of October, 1905, takes refuge in Nelson's phrase "most probably" applied to the bearing-up of the lee column, and assumes that it applies to the whole plan of the attack from to windward, and that by using it Nelson expressly reserved the right to vary the design of the Memorandum. The distinguished historian argues that in substituting the perpendicular for the parallel approach, Nelson was merely adopting the plan for the attack from to leeward, and he suggests that the leeward attack was intended to be made in two main columns perpendicular to the enemy. It is perfectly clear, however, that the leeward approach was intended to be from astern, like that from to windward. The phrase "or wherever he could fetch" "if not able to get so far advanced" leaves no doubt on this point. Moreover, with the wind on the enemy's beam, a perpendicular approach from to leeward would be an impossibility.

Mr. Thursfield, in his articles which appeared in the *Times* in 1905, gives a masterly survey of the tactics of the battle, but his conclusion is vague and indefinite. "The plan of the Memorandum," he says, "was carried out in the battle as closely as was possible in a state of things not exactly identical with that which Nelson anticipated when he drew the diagram contained in the Memorandum. He anticipated that the enemy's fleet, if formed in a line of battle on a certain course, would accept action in that formation and on that course without further alteration; and for this reason his first move was so to dispose the course and formation of his own fleet as ultimately to bring about the exact formation prescribed in the Memorandum." This can only mean that Nelson arranged that Collingwood's column was to be the lee column on the starboard tack. But then Mr. Thursfield proceeds: "When, however, the enemy began to wear, he made no essential alteration in his plan. It was an unexpected move and an unwelcome one, but . . . it was not perhaps altogether disadvantageous to him in the end. He adapted his dispositions to the altered situation with as little modification as possible." All this is of course indisputable, but the question is how was it done? How did the lee column get into its right place on the port tack? As to this Mr. Thursfield is silent. He answers the question "Was the action fought in accordance with the Memorandum?" but he does not attempt to deal with the much more important one, "How was it that the action was fought in accordance with the Memorandum?" "Trafalgar," we are told, "was so great a victory because it was designed by the greatest master of sea tactics that the world has ever known," and yet a few lines before we are asked to believe that Nelson took the weather column into action without ever having thought beforehand how he would deliver his attack, while as to the lee column, a similar state of mind must be inferred if we are to believe that the wearing of Villeneuve was unexpected. This conclusion is the more amazing because the Memorandum expressly contemplates the possibility of such a move, and we know that it had been in Nelson's mind. "I am confident," he had said to Lord Sidmouth before leaving England, "I shall capture either their Van and Centre or their Centre and Rear." To this extent he had been uncertain, but by the 21st October the uncertainty had vanished. No. 76 preserved the ambidexterity of the fleet up to the last moment, and, however Villeneuve might manoeuvre, he could not prevent his rear from being seized and dealt with.

Conclusion.

There is one very obvious difficulty in accepting the solution here put forward, the difficulty, namely, of its having been completely lost. How is it that there is in Collingwood's

account of the battle no allusion to the formation of the fleet at daylight, no comment on Villeneuve's change of course, no hint of Nelson's arrangement for fighting on either tack? Above all, how is it that there is no trace of the design in the Admiralty Memorandum of 1816, which professed to be an improved version of the Trafalgar tactics? This difficulty applies not only to this particular explanation of the attack, but to any other explanation worthy of Nelson. The one explanation it does not confront is that which leaves nothing to explain, because it assumes that the Memorandum was abandoned, and that there were no tactics to be forgotten.

The only conclusion we can come to is that Nelson was the only great thinker, the only really profound student of naval tactics of his age. The result was so transcendent, the victory was so decisive, every subordinate did his work so thoroughly, and, finally, the days following the action were so crowded and so critical that the tactics which had placed the fleet in the position for striking with the greatest possible effect were forgotten. They were forgotten the more easily because they had probably never been fully realised. Profound as was their admiration for Nelson, the men who fought the battle were naturally inclined to magnify their own share in it, and to dwell rather on the fighting than the tactics. They did not understand how much of the victory had been due to the dead admiral, that the soul of the battle had been enshrined in the silent form that lay in the *Victory's* cabin, and that he had conquered before a shot was fired. We have all dwelt on the glorious picture of the *Victory* at the head of her column, with studding-sails set and the last flags of the immortal signal flying, bearing down on the serried miles of the enemy's array. In its appeal at once to the eye and the imagination it was probably the most splendid spectacle ever presented to mortal vision. It is difficult to remember that, greatly as Nelson fills the central place in that majestic scene, his work at that moment was done. It was when at daybreak he hoisted 72 and 76 and bore away that he showed himself the greatest of all the long line of great British admirals. So great that none of his contemporaries realised his greatness. So great that the only sentence of his immortal Memorandum that has impressed itself on the popular mind is that in which he stooped for a moment to the intellectual level of his subordinates and said that any captain who did not understand him could not do very wrong if he placed his ship alongside that of an enemy. Clearly that was what most of the captains did. They did not understand the Memorandum, but they did understand fighting, and they fought in such a way that they gained immortal renown. They did not know how much of the result was due to the genius which had placed them where their valour could produce the best results.

There is another circumstance which goes far to account for this strange oblivion. A curious series of chances prevented the flexibility of Nelson's design from becoming apparent. The diagram of the Memorandum shows the enemy on the port tack, and it was on the port tack that he actually fought. When the British Fleet in Order of Sailing was on the port tack, Collingwood's column was the lee line, and so it was in the battle. And, finally, in the tentative Order of Battle and Sailing issued on the 10th October, the three ships which ultimately formed the advanced squadron are included in Collingwood's division, and, as Collingwood's division was the ultimate lee line, they were in that division in the battle. If the battle had been fought on the starboard tack, it would have been clear whether the interchangeability of the functions of the two columns here suggested was or was not an essential feature of the Nelson Touch.

DISCUSSION.

Mr. J. R. Thursfield:—I am sure, Sir, we must all be very much indebted to the lecturer for his very interesting lecture. Naturally, having myself ventured as a layman to deal with this very complex and difficult problem, I have given a good deal of attention to the lecture, of which I obtained a proof some days ago. I confess that, having studied it very closely, I have found it somewhat confusing. I do not like to say that I have found it confused, because no doubt the confusion is in my mind and not in the mind of the lecturer. I must confess, however, that I found it difficult to jump as nimbly as he does from the attack from to windward, to the attack from to leeward, and from the advanced squadron, which is sometimes part of the weather-line and the lee-line, and sometimes not, to those lines themselves.

THE ATTACK FROM TO LEeward.

I am myself of opinion that it is not much good attempting to find out what was in Nelson's mind with regard to the attack from to windward, which was the attack which he did make, by considering what he intended to do if he found himself compelled to attack from to leeward; but at the same time I cannot help thinking that the lecturer in analysing the attack from to leeward, has brought out results which are not consistent even with the possibility of such an attack. "Let us," he says, "suppose a diagram like that of the memorandum illustrating the attack from to leeward." You cannot suppose anything of the kind. There could be no attack from to leeward similar to the designed attack from to windward. He says that in that case the lines representing the British fleet in Nelson's diagram will be below that representing the enemy. That is quite true. He says also, "If the fleet retains its order, Nelson's column will be next the enemy." In that case, I understand that the lecturer thinks that in an attack from to leeward Nelson's lines would be on the same tack as the enemy's line. Is that so?

Mr. Cobb:—That is so.

Mr. Thursfield:—And both close-hauled.

Mr. Cobb:—It might have been both close-hauled.

Mr. Thursfield:—Nelson speaks of a line of battle, and Admiral Field or Admiral Fremantle will correct me if I am wrong in thinking that a "line of battle" would mean a close-hauled line. I appeal to the seamen to tell me how on earth Nelson could ever have got to an enemy's line if they were both on the same tack and both close-hauled.

Admiral Fremantle:—I do not think they could have been both on the same tack.

Mr. Thursfield:—Being both close-hauled and both on the same line Nelson could go no nearer to the wind?

The Chairman:—I do not see how he could.

Mr. Thursfield:—He must have tacked long before he came within gunshot, because no one could suppose he would tack his whole line within gunshot. On the other hand, if he were not on the same tack then again he could not by any possible means be parallel to the enemy's line, as he showed himself to be if he was making the windward attack. I think that the angle that the two lines would bear to each other would be somewhere between 30 degrees and 45 degrees. Now, if you draw a diagram with Nelson on the opposite tack to the enemy you will find that the advance squadron will be then nearest the enemy, and if Nelson is going to fetch, as he says, and pass through at the centre, the advance squadron will pass through three or four ships ahead. He does not need to make any change for that purpose. Collingwood, on the other hand, is still leading the lee-line. He is bearing from Nelson's ship in the direction of the wind, and if he kept on his course he would strike the enemy's line, if he could fetch it at all—which Nelson felt was exceedingly doubtful—three or four ships from the enemy's centre. As there were twenty-three ships in the rear half of the line, forty-six in all, it is obvious that in that case he would strike the enemy's ship at the twentieth ship and not at the twelfth as intended. What would happen would be that the advance squadron would keep on its course, Nelson would keep on his course, Nelson would hit the centre, the advance squadron would hit the third or fourth ship ahead of the centre, and Collingwood by bearing up would hit any ship he could. It would be a very difficult position to take and maintain. The moment Villeneuve saw Nelson was making that kind of advance he would obviously bear up, by which means he would twist his tail round to an extent that Nelson could not meet. That was obviously what Nelson meant by speaking of the difficulty of Collingwood fetching as far forward as twelve ships from the rear. But by no possibility can you turn the attack round and merely reproduce the position that is given in Nelson's own diagram. I may say, in passing, with all respect, that the lecturer has not given Nelson's own diagram quite exactly; there are two diagrams, both of which are given in Mr. Corbett's book. In one case the lecturer assumes that the enemy is on the port tack. He might be on either for that matter, but I will take it he is on the port tack. In that case the lee-line should be opposite the centre of the enemy's fleet, and it is so given in Nelson's Memorandum. In one of the diagrams given by Mr. Corbett the lines are reversed as if the same procedure would take place in the case of the starboard tack, but that is only a small point.

THE INTERCHANGE OF FLAGSHIPS.

I now come to the great point the lecturer makes, namely, the interchange of the flagships as between the weather and the lee line.

I think as far as possible we had better avoid conjecture.. The lecturer tells us how he thinks Nelson would have manœuvred his fleet if Villeneuve had not wore. It is a most ingenious speculation, but you might just as well ask what would have happened if Paris had not carried off Helen. It is assumed by the lecturer that the only way in which Nelson could have carried out the plan of the Memorandum would have been by inverting the lines in some way or other. It may be so. He was ten miles off when he gave the order to bear up. Villeneuve had not then wore, although he began to wear soon afterwards. Nelson was tactician enough to make up his mind when a contingency arose what he would do, and I do not think you can go any further than that. Nor, again, can I see that it is much good conjecturing what he would have done with the advance squadron if he had had it. Obviously the scheme on the day of battle was to form the order of sailing in two columns and bear up, and therefore the advance squadron was by that time incorporated in one or other column, or partly in one and partly in the other. He might have ordered the advance column to haul out again, but it would have broken up Collingwood's line altogether. Therefore, I do not think it is any good trying to draw any inferences as to what was in Nelson's mind by considering what might have been in his mind if something had happened that did not happen.

Lastly, the lecturer is good enough to mention me in one or two passages, but I do not think I need trouble the meeting with anything about that, except on one point. He quotes me as saying that it was part of Nelson's plan that the lee-line should be parallel to the portion of the enemy's line that he was to attack, and that the weather-line should be parallel, and also the advance squadron, if it were there, should be parallel. That is not an inference of mine. It is merely putting in words the plain meaning of the diagram which Nelson drew himself. It is not necessary for me to vindicate my opinion at all, because it was not an opinion of mine, but a mere interpretation of Nelson's own diagram.

LIEUTENANT SENHOUSE'S ACCOUNT.

I would just say one word about the Officer of the "Conqueror," Senhouse. He was at the time a Lieutenant of three years standing, and he afterwards became a very distinguished Admiral, who had been Flag Lieutenant and Captain of the Fleet to many other distinguished Admirals. About the year 1820, he wrote a memorandum on the subject of the Battle. I think it is perfectly demonstrable that his account of what Nelson should have done if the regulation plan had been carried out is not in accordance with Nelson's Memorandum. With regard to Senhouse being an eye-witness, he was, as I have said, a Lieutenant of three years standing, and I would ask Admiral Fremantle or Almiral Field to tell us what would probably be the station of a Lieutenant of three years' standing in a vessel going into action, and whether he would be in a position to make any observations of his own. Probably he was not an eye-witness, or probably he was at best an eye-witness of what was going on on the gun deck. Certainly in manœuvres I have seen actions fought, and except for the sub-lieutenant or the midshipman in immediate attendance on the captain I do not suppose any officer except those on the bridge knew anything about what was going on. I do not know whether Sir Edmund Fremantle would corroborate me to that extent. No doubt Senhouse's opinion is entitled to all respect, but it was an opinion formed not on what he had seen, but on what he had heard discussed after the battle, and many years after the battle. I cannot for one single

moment put it into comparison with what Collingwood plainly tells you, that Nelson had concerted the plan with him, and that the plan was carried out. Surely the second in command must have known how he fought the battle, and whether it was fought in accordance with the Memorandum or not.

PLANS OF PRIGNY AND MAGENDIE.

With regard to the plans, naturally plans are very valuable if drawn by people who are in a position to know what happened. We have plans of Magendie and Prigny, and a great deal of stress has been laid on the fact that they were there and saw what happened. You may take them all, and Nelson and Collingwood and whoever you like, and roll them all into one, and then ask them what they can make out of the dispositions of a fleet which is ten miles off. I think all these plans of Prigny, Magendie, and others, are of very great importance as showing what was the position of the French fleet, about which they necessarily knew a good deal, but they must be used with the very greatest caution, and only very doubtful inferences can be drawn from the fact that they represent the British fleet in a particular formation. I have laid stress on this because I did not want to be too controversial, and this point appeared to me to be more or less the basis of the lecturer's rather startling conjectures. Whether it would be possible or likely that a Commander-in-Chief in going into action would at the very last moment of the advance tell the second in command to change places in the order of battle with himself I do not know. I have seen a good deal of fleets in evolution, but it appears to me to be a very unlikely thing, and I would appeal to naval officers who are present to say whether it would be at all a likely thing to do, and in the next place whether we can regard it as a thing that Nelson was at all likely to think of doing, without telling his Admirals and his Captains beforehand that it was his intention to do it in certain contingencies. If we cannot draw certain inferences—and it appears to me that we can only draw the most doubtful inferences from conjectures of this kind—the whole superstructure of the lecturer's arguments seems to me to fall to the ground.

Admiral The Hon. Sir E. R. Fremantle, G.C.B., C.M.G. (Rear-Admiral of the United Kingdom):—This has been a very important lecture, Sir, and I should like to have had an opportunity of studying it thoroughly. I confess I have not been able to master it by just listening to it after I came into this theatre. There are some points made by the lecturer that I think are certainly more or less new, and which are worthy of consideration.

THE ATTACK FROM TO LEeward.

I attach considerable importance to the way in which he deals with the attack from to leeward, which is certainly far more directly sketched out by Nelson than the attack from to windward. We may observe in the attack from to leeward that he distinctly intended the reserve squadron to act independently. I do not know where the lecturer exactly gets the notion that the reserve squadron was necessarily intended to join one line or the other, but he does make out his point that those three ships which alone formed the reserve squadron under the circumstances of the battle did join the lee division of the fleet.

Mr. Thursfield spoke about being on one tack or the other. I think there is no question about it that obviously Nelson intended to cut the line from to leeward on the opposite tack of the enemy. He spoke of

the lee-line fetching so far and so on, and also considered whether his own ship would "fetch" sufficiently, and the Commander-in-Chief was to make the reserve squadron, which were comparatively fast ships, attack several ships ahead of where he would attack himself, so as to be sure to engage the enemy's Commander-in-Chief.

Under those circumstances I think there is no doubt how he intended to attack. We may regard it as a fact that he could not possibly attack in line abreast in attacking from to leeward; he must to a great extent be attacking in line ahead. He did not wish perhaps to do so, but he could not help it. In attacking from to leeward you must be in line ahead, although you will be in parallel to the enemy, and it is quite obvious that if you are to cut the line, from a slanting direction no doubt, you must be in line ahead. I do not think, therefore, he attached such a very great importance to the question of being in line abreast.

I quite agree with Mr. Thursfield that at a distance you will make great mistakes as to what the position of the enemy is. I think perhaps it was a little easier in the days of sail than in the days of steam, because you knew very well with a ship under sail that there were some directions in which she could not be steering, that she must be on the starboard tack or the port tack, or going free. When you come to steam you have every point of the compass open to you.

THE ORDER OF SAILING.

I think we must attach some importance to what was said by the Chief of the Staff about Nelson's fleet being practically in irregular line of battle when the enemy were first sighted. I think that seems to be pretty clear. I do not understand why the lecturer says the order of sailing is not the order of sailing in two columns, or three columns as the case may be, because the order of sailing is simply the order of sailing in which the fleet is at the time. When Nelson speaks of the order of sailing I take it he means the order of sailing defined in the orders which are generally given, that is to say, in two columns or three columns as the case may be. But it does appear to me that they were in irregular line of battle when they first sighted the enemy. That may have been intentional on Nelson's part so as to keep his ships together, and also, in the light winds, not to be too far away from his second, Collingwood. Under those circumstances it does appear likely that they bore up practically together, and then gradually drew into line ahead.

"BEAR UP IN SUCCESSION."

I recollect going to the office and looking in the old logs to see about the signals. I cannot recollect all about it now, but I was satisfied then that the second signal was, "Bear up in succession." We all know that bearing up in succession means the Admiral or leading ship in each line bearing up first, and the rest following him. It does look as if they would naturally fall into line ahead in process of time, and it appears that that is what they did do. Collingwood appreciated that he was to be if possible parallel to the enemy, and consequently we know that at a certain time—the time is disputed by the lecturer, but, as given by Mr. Julian Corbett, is certainly very much earlier than we thought it was—he did form a line of bearing or tried to form a line of bearing as soon as he could, and I think he thought he was carrying out the details of the Memorandum.

Mr. Thursfield:—Villeneuve began to wear about 8 o'clock; that is the time given in nearly all the French and Spanish logs.

Admiral Fremantle:—That is quite true, but I am speaking now

about the time at which Collingwood made the signal to form line of bearing. What you mean is that he had seen Villeneuve was beginning to wear.

Mr. Thursfield:—He had seen that Villeneuve was beginning to wear, and he had seen that Villeneuve's rear could not get into position for some time, and therefore he got very nearly into parallel with Villeneuve's rear.

MR. JULIAN CORBETT'S SUMMING UP.

Admiral Fremantle:— I am inclined to think Mr. Corbett's summing up is practically as near as we can get it. He says in his "Campaign of Trafalgar," as quoted by the lecturer:—

"Was the battle fought in accordance with the plan of attack, or was it not? In major tactics it was; in its minor tactics it was not. The main ideas were fully and triumphantly realised, but the actual method of realising them was not the one Nelson had indicated."

I quite agree with that, I think that is practically what it was. I believe the overpowering idea in Nelson's mind, latterly at all events, was that he must get at them and prevent them getting into Cadiz. If it involved attack in line ahead I do not think he particularly cared. He had three very heavy ships in front of his line, and we know Collingwood had his principal ships at the head of the line. He certainly never made any signal to Collingwood to shorten sail, and therefore he did not wish him particularly to take any great trouble as to whether he attacked in line ahead, or whether he attacked in line of bearing, but he bore down with all his sails set and endeavoured to cut through the enemy's line somehow.

A FEINT ON THE VAN?

I think perhaps the most interesting part of the lecture is whether those ships really did sail along the line at all, whether Nelson made a feint at the van, which has been disputed, whether Collingwood did fire his port guns at other ships and then cut through the line, or whether he made straight for them. I do not think it is perfectly clear, but the lecturer produces some evidence that Collingwood did alter course as he supposes. I understood that Collingwood was in action some minutes before the second ship, the "Belleisle," twenty minutes at all events, and some have said a great deal longer.

We do not know whether the lecturer can prove his case. I cannot get nearer to it than by quoting what Mr. Corbett has said. I am quite sure that Nelson had a great many ideas in his head as to what he was going to do, but I think the over-mastering idea in the latter part was, that he was satisfied Collingwood was carrying out his general view of his attack on the rear, and that he himself was preventing the van making any attack to intercept him by being a little behind Collingwood, and also possibly by some feint on the van. He was taking care, as he said himself in one of his Memorandums, that the lee line should not be interfered with.

Under those circumstances he did carry out the principles of his Memorandum, but I do not think he was able under the circumstances to carry out the details of it. If he had stuck to a red-tape view of what he had intended to do according to his Memorandum, it is more than probable that we should have had only a partial action, and we should not have had that great victory which resulted. Nelson was so great a man that he could depart from principles he had laid down, especially when conducting his own division. He acted as circumstances required.

I wish I had seen the lecture before so that I could have studied

it more thoroughly, for I am quite sure it is well worthy of study. These diagrams are particularly interesting. Although, as Mr. Thursfield says, it is not safe to attempt to judge a fleet by its appearance at a distance, I think there is very little doubt that that *Naval Chronicle's* second position, where they are in a sort of a "V," is very much like what was taking place when they were bearing up towards the attack. The final position, the last stage of the advance, strikes me as not at all far off what probably really did take place. The question is a very technical one and would necessitate looking up the signals to see the exact meaning of them and to refresh one's memory before speaking positively.

THE ATTACK IN LINE AHEAD.

I did not think I should hear anything fresh this afternoon about Trafalgar, but I am bound to say I have. I am sure we have no business to put too much of what I may call, theory in action, upon Nelson. I have never agreed with Admiral Colomb's endeavours to make out that none of those who were in the action, although they might not know the exact details, or exactly what was done, did know generally the way in which they attacked; and to say that they made really anything like an attack in line abreast when really the attacks were practically in line ahead, is rather presuming too much. Not only have we what they said at the time in the Admiralty Memorandum of 1816, but we have also Lord St. Vincent saying it was a novel form of attack. At all events, the writers of the Admiralty Memorandum, Lord Nelson, and the Captains of the ships at Trafalgar, were all under the impression that they did attack more or less in line ahead, and I do not think we have any right to say that these people did not know anything about it. When it comes to details and exactly what Nelson meant to do, or exactly what Collingwood meant to do, I think many of the Captains may have misunderstood and have failed to know exactly what was being done, as has been well explained by Mr. Thursfield.

Mr. Thursfield:—I shall be glad to hear the opinion of officers as to whether it would be likely that Nelson in the course of the advance would change places with Collingwood in the lines.

Admiral Fremantle:—Do you mean if the enemy had not wore?

Mr. Thursfield:—Yes.

Admiral Fremantle:—I think it is quite possible that if they had not wore Nelson might have taken the part that Collingwood did, but that was not his intention.

Mr. Thursfield:—Would he have inverted the line, making the lee-line the weather-line, and the weather-line the lee-line, or would he have transposed the flagships?

Admiral Fremantle:—I do not suppose he would have transposed the flagships.

Mr. Thursfield:—That is the point I want to get at.

Admiral Fremantle:—No, I do not think that he would. The lecturer seems to have an idea that if Villeneuve had kept on the starboard tack, instead of wearing, the flagships of the two British Divisions might have changed lines, and that Nelson would have then led Collingwood's line. This is inadmissible; such a change was, I am satisfied, never contemplated, but an interesting question never sufficiently considered appears to me to be, "How did Nelson propose to attack his enemy on the morning of the 21st October, when he first sighted him, and before the allied fleet wore?" In my view it is probable that he would have taken the part

which afterwards fell to Collingwood; the three ships named by the lecturer joining Nelson's division. He would have carried out the "Nelson Touch," but he would certainly not have delayed the attack.

Mr. G. Wheatly Cobb, in reply said:—I think the first thing I have to do is to thank Mr. Thursfield and Sir Edmund Fremantle for having been kind enough to take sufficient notice of the lecture to come here and give us their views, which must be always a subject of great interest, not only to sailors, but to Englishmen generally. I do not pretend to be a sailor—I have said in the lecture that I am a landsman—and therefore I was quite prepared to be corrected to any extent with regard to any movements of the fleet I have ventured to comment upon.

With regard to the attack from to leeward, I concede everything Mr. Thursfield has said. I think it is quite possible I was wrong in what I said about the possibilities of attack from to leeward, but as the attack was not made from that quarter it does not affect my argument.

Mr. Thursfield said that it is useless and impossible to speculate as to what Nelson would have done in certain circumstances which did not arise. That is, of course, perfectly true, but the circumstances I have speculated on had arisen. In the first instance, there was every indication that Villeneuve was going to fight on the starboard tack. Mr. Thursfield said that Villeneuve did not begin to wear until 8 o'clock, but Nelson says that at 7 the enemy was wearing.

Mr. Thursfield:—That is quite true, but nearly every log in the French and Spanish fleets makes it 8 o'clock. There must have been a difference of time. There is plenty of evidence that the "Victory's" time was different from the time amongst other ships.

Mr. Cobb:—I will make you a present of that, because the later he wore the better for my argument. The longer Villeneuve continued on the starboard tack the longer Nelson had for making his arrangements for fighting on that tack, and therefore the more was he committed to it. The argument that Nelson intended to fight on the port tack makes Nelson to my mind a prophet. Great man as he was he was not a prophet. He could not foresee what anybody was going to do before they had given intimation of their intention to do it. He thought it was quite possible that Villeneuve might wear because it was the recognised way of meeting his attack, but he could not make his dispositions for fighting on the port tack until he had some indication that Villeneuve was going to get on to the port tack.

AN UNANSWERED PROBLEM.

The difficulty which it seems to me none of the critics have met is, how it was that Nelson, having started with the idea that Villeneuve was going to fight on the starboard tack, was able, when he wore, to place the lee column, which had been disposed for an attack on the starboard tack, in its proper position for an attack on the port tack. The lee column had to cut off the enemy's rear. The enemy's rear till 8 o'clock or till some even later hour, whichever Mr. Thursfield wishes, had been in an entirely different place from the rear which actually was the rear in the battle. How was it that the lee column in the actual attack found itself exactly in the place where it ought to have been? That is the great problem, which I think none of the critics have attempted to meet, and which I have tried to meet in this lecture.

It does not seem to be at all an adequate way of explaining what took place to say that Nelson simply "went at them," because he went

at them exactly in the right way and in extremely difficult circumstances. If his attack had not come off properly he would have had to cut off the van. He did not cut off the van, but he did cut off the rear. How was it that he cut off the rear?

Now, I have attempted to explain that, and that has to be explained if we are to get at the secret of the way in which the battle was fought. Mr. Thursfield said a great deal about the officer of the "Conqueror," Senhouse, not being qualified to know what was going on. My whole argument is that his statement was a wrong statement. He said that Nelson changed his mind, and my point is that Nelson did not change his mind, but carried out his plan exactly. When Senhouse said that Nelson abandoned his plan, Senhouse was wrong. When Mr. Thursfield says that Senhouse was not qualified to pronounce an opinion, I am entirely with him.

THE FLAGSHIPS CHANGING COLUMNS.

Another point made by Mr. Thursfield was about the difficulty of the flagships changing columns. I quite admit that it is a large assumption that it was part of Nelson's plan that the flagships might have to change columns; but it must be remembered that in the original formation of the fleet, that is to say, in the single line ahead, with the two flagships in the centre, the change of position would have had very little significance indeed. It was not until a later hour, when the columns had developed into their ultimate form, that it would have been at all an important movement. We know the flagships were not intended originally to lead their columns. We know that Nelson ordered two ships, not the flagships, to lead the respective columns later on.

The great argument for assuming something of that sort is, that the first and second in command and the advanced squadron are excepted from the order of sailing, that the order of sailing did not apply to them. Why did Nelson say the first and second in command were excepted from the order if their positions in the fleet were stereotyped and not intended under any circumstances to be altered?

THE ADVANCED SQUADRON.

With regard to the advanced squadron, Mr. Thursfield said that it would have been very confusing if they had left one column and got into another. That is quite possible, but it must be remembered that until quite a late hour in the morning the advanced squadron was not attached to either column. We have, what I ventured to point out in one of the French plans, the "Colossus" shown detached from the fleet altogether. Until quite a late hour they were placed between the two fleets and not attached to either column. Therefore it is simply a question of to which column they are to be attached. Of course I assume that Nelson when he arranged this interchangeability of the functions of the columns explained it very carefully, at least to Collingwood and to the officers of the advanced squadron. We have every reason to believe that he did, because, as I pointed out, in Dr. Beatty's narrative, it is recorded that the captains of the three ships of the advanced squadron came on board the *Victory* on the morning of Sunday, and no doubt the whole thing was carefully explained to them. Therefore it would not take them by surprise, and I do not think it would have taken anybody by surprise that the advance squadron should have attached themselves to either of the columns.

With regard to what Sir Edmund Fremantle said about Mr. Corbett's final judgment, Mr. Corbett's final judgment is a very guarded and a very careful one, and no doubt in that way he is to be much more commended than I am, because I have very rashly thrown in my lot for one particular solution. Mr. Corbett says that in major tactics the Memorandum was carried out, but not in minor tactics. It seems to me that the whole question of major and minor tactics turns on the position of the lee column. If the lee column was in its right position in the battle, if the rear was cut off in spite of Villeneuve's wearing, it seems to me it is not enough to say that only the major tactics were carried out. I think you must take it that the minor tactics were carried out too, because the whole plan was for the cutting off of the rear, and if the rear was fairly cut off it is not enough to say that the battle only followed the Memorandum in major tactics, because under the circumstances it was so extremely difficult for the Memorandum to be carried out. It seems to me it is doing very much less than justice to Nelson to say that he more or less threw tactics to the winds and committed himself to "Get at them as you can" form of attack. If he had done that he must have necessarily, under the circumstances, cut off the van instead of cutting off the rear. I should like this paper to be looked upon less as a dogmatic opinion, than as suggesting points on which no opinions have yet been expressed, and asking for opinions from those who are more qualified than I am to pronounce upon the matter. The whole question is: how was it that when Villeneuve wore and turned his rear into his van, the plan was carried out and the lee column found itself exactly in its right position? The enemy's reversal of course ought to have thrown out the plan, and it did not. I think I have noticed all the points arising in the discussion. I can only thank you, ladies and gentlemen, very much for coming and listening to what I have had to say, and I hope I have succeeded in raising some points to which those who are very much better qualified than I am to arrive at a solution will give their attention with the view to telling us more of the way in which the great battle was fought.

The Chairman (Vice-Admiral A. M. Field):—However much opinions may differ as to the way in which the Battle of Trafalgar was fought, we must all agree that the lecturer's interpretation of the Memorandum is a very interesting attempt to explain its meaning and to reconcile the facts of the action with the principles underlying the Memorandum.

The lecturer's views afford an alternative to the notion put forward by another writer that Collingwood unwarrantably assumed the command of the lee column. It seems to me that the fact of forming the line of bearing saved the whole situation and was the vital point, but it was intended, of course, by Nelson from the very first. I cannot understand the idea of the control having been unwarrantably assumed. The same writer also goes on to say that Nelson showed resentment by interfering with Collingwood's column by signalling to ships of the lee line. I think myself it is unfortunate that that view should be put forward, because I can see no justification for it. If the lecturer's theory of the flagships changing column is correct, it is a very startling theory, and it is difficult to understand how it was not more generally known. Such an unusual departure, I imagine, would be a thing that would have been widely known. It is a very ingenious suggestion, but the reasons given in the lecture for its not being known hardly seem to me to meet the point. I am sure the meeting will desire me to convey a hearty vote of thanks to the lecturer for his interesting Address.

THE ORGANIZATION OF A BATTALION IN WAR AND PEACE.

BY

CAPTAIN G. J. SCOVELL, Queen's Own Cameron
Highlanders

"Want of organization is more fateful than want of discipline."—
Henderson.

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APPENDIX A.—War and Peace Establishments compared.

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FOREWORD.

THE writer feels called upon to preface this article by stating that for the past three years¹ he has held the appointment of adjutant to a home battalion, and has therefore been in a position to observe carefully the many disadvantages under which the present system labours. The modern trend of ideas on war training, so largely influenced by the ceaseless adaptation of science to warfare, daily tends to call for a more scientific system of battalion organization than the British infantry has been blessed with in the past: the greater the calls made on the zeal and energy of the company and detachment commanders, then the greater their dislike to the frequent and exasperating changes in the personnel of their commands: to give them every encouragement by ensuring that they have

¹The article was written at the latter end of 1910.

real responsibility, proper facilities for progressive training, and a command in some way commensurate with that which they will be called upon to lead in war appears to us to be the ideal for which we must all ceaselessly strive.

INTRODUCTION.

Before attempting to examine satisfactorily the problem of Infantry Organization, it is necessary to keep clearly before one's mind the various principles on which it should be based. Briefly summarized, they are as follows:—

- (1) The British Army exists for war, and for war alone; therefore all sentimental considerations, so long as they do not affect the "moral" of the Army in a marked degree, must be banished if reforms are to be effected.
- (2) The cost in £ s. d. of any change is an essential factor in determining its practicability.
- (3) That the aim of any organization should be to give as much real responsibility as possible to the greatest number of individuals.
- (4) That questions dealing with drafts, periods of engagement, ability to recruit up to strength, increases in the non-effective charges, must never be lost sight of, being as they are of the utmost importance in a voluntary army.
- (5) That the home establishment of a unit should be so arranged, as to harmonize as closely as possible with that of war.¹
- (6) That the training (or, in sporting parlance, the "close") season commences on November 1st, and ends on September 30th the following year, every possible change in personnel being therefore compressed into the month of October.
- (7) That the officers and N.C.O.'s form the backbone of a battalion, and that constant changes during the "close" season in the personnel nullify all attempts at a really progressive system of training.

¹A moment's glance at the peace and war establishments of the British Infantry goes to show that this is not so. In the one, the strength of a company is considered, while in the other not a thought is bestowed on it. The writer has endeavoured to rearrange the method of showing peace establishments in consonance with those of war.

With these principles well in view, the writer intends in the first place to examine thoroughly the composition of a mobilised British infantry battalion, and to ascertain as approximately as he can the greatest number of rifles a company commander can command under four different systems of company organization, viz :—

(a) The existing company system.

(b) A seven company system, with an additional headquarter company, containing all odd detachments for **whose training** the company commanders are not responsible, and who form no part of the fighting strength of their companies.

(c) An eight company system, with an additional headquarter company containing all odd detachments, is also touched on.

(d) Six companies with an additional headquarter company.

The four, or double company system, has purposely been omitted; it has sundry disadvantages, and the question of the desirability of its introduction into our Army, though it has often been discussed at lectures and in print, has not been very seriously considered during the past few years. It suffers from two outstanding weaknesses: firstly, it places responsibility on only four shoulders, in comparison with eight under the British system, and, secondly, it lacks elasticity—an important point when small wars have so often to be reckoned with.

After discussing War Organization, the intention is to pass to that of Peace, when it will easily be seen that a company suffers from having on its books a number of individuals who form no part of its fighting strength, either in peace or war.

Consideration will next be given to the arrangements in vogue in foreign armies, after which suggestions for constructive reforms will be outlined and submitted for consideration.

THE BATTALION WAR ORGANIZATION EXAMINED.

(vide Appendix A).

A battalion in war is divided up into certain "departments," each of which has its responsible head, and is separately trained in peace time for the duties required of it in war. Some departments, as will be seen hereafter, only exist in war; others only in peace.

War Establishments re-arranged in "Departments."

	Officers.	W. O's Staff Sergeants and Sergeants.	Rank and file.
(1) COMMAND (Commanding Officer & Senior Major) with Batmen	2	—	4
(2) RECORDS & DISCIPLINE (Adjutant, Sergeant-Major, Orderly-room Clerk, Sergeant-Drummer, Provost-Sergeant, Batmen) ...	1	4	2
(3) SUPPLIES & CLOTHING (Quartermaster, Cook, Shoemaker, Pioneer, Armourer-Sergeants, Batmen & Assistants: Officer's Mess-Sergeant & 3 men: Quartermaster-Sergeant) ...	1	6	8
(4) MEDICAL, under the Medical Officer attached, includes Sanitary Squad, Stretcher Bearers, & Water Dutymen ...	1	—	48
(5) TRANSPORT under Regimental Transport Officer ...	1*	1	21
(6) SIGNALLERS under Signalling Officer ...	1	1	32
(7) MACHINE GUN under an officer...	1	1	15
(8) EIGHT COMPANIES under a captain	21	38	814
Total ...	29	51	944

* Under the new transport organization will probably not be required.

Deducting 10 pioneers, who in war time are usually attached to the Supplies and Clothing "Department," it leaves each company commander, under our existing company system, with a unit of a fighting strength of:—

- 3 officers (3 companies with only 2),
- 1 colour sergeant,
- 4 sergeants (2 companies with only 3),
- 100 rank and file (approximately).

Of the latter two men lead the pack animals, which leaves the company commander 98 rifles in all, or 4 sections of some 25 men each. No allowance has been made for casualties and sickness, and it therefore appears doubtful whether his command could not with advantage be increased. If "Departments" (1) to (7) were all merged into one company under the third senior officer for administrative purposes, we should then find the remaining seven fighting line companies approximately of the following strength:—

- 3 officers (one company with 2);
- 1 colour sergeant;
- 4 sergeants (3 sergeants surplus);
- 115 rank and file.

Which, deducting 2 men as leaders for pack animals, gives four sections of approximately 33 each. At the same time, the strength of the 8th—or headquarter—company will be:—

- 8 officers (includes medical officer);
- 13 warrant officers, staff sergeants and sergeants;
- 130 rank and file, which includes headquarter batmen, signallers, machine gun, details, attached, transport, officers' mess;
- 3 stretcher bearers, sanitary squad.

It would seem to be an open question whether the sanitary squad and stretcher bearers should not be distributed with the companies to which they belong.

PEACE ORGANIZATION OF A HOME BATTALION EXAMINED.

(vide Appendix A.)

In the majority of home battalions the largest influx of recruits takes place early in the year, while the efflux of trained soldiers for service abroad makes itself felt in the late autumn. The voluntary system of enlistment and the heavy strain of keeping up an over-seas army in all probability render these fluctuations quite unavoidable. The writer has therefore considered it necessary to take the full peace establishment (home service) as the only basis from which to carry out an examination of the strength and organization of a battalion.

If the peace establishments are worked out by "departments," as we have previously done in the case of war, the result is found to be as follows:—

PEACE ESTABLISHMENT OF A HOME BATTALION BY
"DEPARTMENTS."

	Officers.	Warrant Officers, Staff Sergeants, and Sergeants.	Rank and File.
(a) COMMAND. Commanding Officer & senior major with batmen	2	—	4
(b) RECORDS & DISCIPLINE & RE- CRUITS. Adjutant, Sergeant- Major, Orderly-Room Ser- geant, Orderly-Room Clerk, Drum-Major, & Provost Ser- geant.*	1	5	2
(c) SUPPLIES AND CLOTHING.			
(1). Quartermaster, Quarter- master-Sergeant, with clerks, assistants* & batmen ...	1	1	4
(2) Tailors, shoemakers pioneers, cook-sergeant	—	4	—
(3) Officer's Mess.	—	1	3*
(d) MEDICAL.			
(1) Sanitary Squad	—	—	9*
(2) Marching sick (usually an old soldier)	—	—	1
(e) TRANSPORT. (Officer only occa- sionally away from his com- pany)	—	1	3*
(f) SIGNALLERS	1*	1*	32*
(g) MACHINE GUN SECTION	1†	1	14
(h) BAND	—	2	21
(i) MUSKETRY. Assistant Adjutant & C.S.I. Musketry	1	1	12
(j) BOYS	—	—	—
(k) EIGHT COMPANIES	19	24	631

† Now additional to the 1910 Establishment.

* Attend Company Field Training.

EXEMPTIONS FROM ANNUAL COMPANY TRAINING.

The regulations admit, however, of a considerable number of exemptions from the annual company training, viz:—

	Officers.	Sergeants.	Rank and File.
The Machine-Gun Section	1	1	14
Pioneers	—	1	10
Command, Warrant-officers & Staff Sergeants	4	8	21
Bandsmen	—	2	12
Boys	—	—	—
Assistant Adjutant & C.S.I.M. ...	1	1	—
Transport & Officer's Mess Sergeant	—	2	—
Also some special exemptions such as:—			
Men over 15 years service, say	—	—	10
Recruits at drill, say	—	—	20
Special Regimental or Garrison employ, say	—	—	5
In hospital, say	—	—	10
Absent on command, special furloughs, etc.	—	—	20
APPROXIMATE TOTAL	6	15	122

Deducting the above exemptions from the Peace Establishment, we find that:—

19 officers,
26 colour sergeants and sergeants,
614 rank and file,

remain available for company training, giving each company approximately:—

2 officers (3 companies with 3),
1 colour sergeant,
2 sergeants (2 companies with 3),
77 rank and file.

If, on the other hand, the Signalling and Transport "Departments," together with the Provost Sergeant, were eliminated and placed in a headquarter company under a captain, with a colour sergeant for accountant duties, a company under the seven company system would work out somewhat as follows:—

	War.	Peace.
Officers	3	2 (3 companies with 3).
Colour Sergeant	1	1
Sergeants	4	2 (2 companies with 3).
Rank and file	115	83

The "Break Up" of the Company.

The cardinal difference between the eight and seven company systems is that in the former some of the section com-

manders are merely birds of passage, who, as soon as the training in the company is over, disappear from it for the remainder of the training season, while in the latter they remain constant, and very few, if any, changes occur; as regards the rank and file in both systems, the company commander has some 70 per cent. of the total company fighting strength allotted to him in war. No one should have any right to complain if he gets 70 per cent. of his war establishment for his annual training. Unfortunately for the company commander, it is at its conclusion that he faces disaster and disappointment. No sooner is his training over, and his musketry completed, than he finds his command reduced to the merest shadow of its former self. At various times and in varying degrees during battalion, brigade, and divisional training he has to supply:—

- (1) Instructors for drilling recruits.
- (2) Instructors for recruits musketry.
- (3) An N.C.O. to a gymnastic course, or to Hythe, or to mounted infantry, or to the garrison school.
- (4) N.C.Os. to Bisley for marking.
- (5) N.C.Os. as gatekeepers at the tournaments, pageants, etc.
- (6) A provost sergeant and sergeants' mess caterer.
- (7) Acting bandsmen return to their music.
- (8) Brigade Communication Section.
- (9) Brigade scouts.
- (10) Garrison employments.
- (11) Tailors and shoemakers to their work.
- (12) Clerks to their offices.
- (13) A party to mounted infantry.
- (14) Recruits to Table A.

and finally his subaltern to another employment or possibly to a course. Instead of 75 on parade, he finds but 35, and, what to him is of far greater consequence, only one or at most two of his original section commanders remain with him; a little later he finds his company gradually increasing in numbers; on going into things, he discovers the newcomers are raw recruits just off the square, and entirely ignorant of all field work. If these same men only "stick it" on manœuvres, and he finds he is enabled to obtain some semblance of order in his sections, he is well pleased. All thoughts of progressive training have of course long since vanished.

The difficulties of the junior officers in a continental army are as nothing in comparison to those of our own regimental officers; the former take in all their recruits in one day in each year; they do not suffer the loss of a section commander as a drill instructor, or for Table A, or for gymnastic work, and as a consequence they reap the benefit of a thoroughly progressive system of training. The writer heard lately that our Infantry were sharply criticised for lack of fire discipline during the past manœuvres. Can its absence be wondered at when the

facts are faced? The marvel is that companies show up so well. It surely speaks volumes for the leadership of the officers and N.C.O.'s and the adaptability of the men.

The Remaining "Departments."

It only remains now to examine the state of the other "Departments" in a battalion in peace time, and to ascertain what difficulties they, too, have to face, and whether their war training suffices.

TAILORS AND BOOTMAKERS.—In war they fight in the ranks of their respective companies: in peace they do a considerable amount of training, and somehow manage to get through their technical work: as soldiers they can well be considered efficient.

PIONEERS.—Exempt from company training, for no apparent reason. It appears questionable whether the establishment of 10 is altogether required; in any case, as in peace or war they habitually march with the 1st or 2nd line transport, they form no part of the fighting strength of a company. It is submitted that they should at least attend company field training every other year.

SANITARY SQUAD.—In peace clean barracks in conjunction with the Pioneers: they train with their companies, but in war are under the orders of the medical officer attached to the battalion. As they constantly change, it would appear undesirable to remove them from their companies to a headquarter company.

TRANSPORT.—The sergeant, unlike his men, never attends company training; both he and his men are fully occupied the rest of the year with their legitimate work, which, so far as they are concerned, is their war training. In war the transport personnel expands to 1 transport officer, 1 transport sergeant, 12 drivers. If in peace time the transport cadre was struck out of a company, they would not be missed.

MACHINE GUN SECTION.—It is now realised that this is a unit by itself: the officer, N.C.O.'s and men must in future be struck off everything throughout the year, and they therefore form no part of a company's fighting organization. It would in all probability assist their instruction if they lived together.

SIGNALLERS.—The officer and sergeant both usually train with their companies, and so do the signallers. At the same time, one constantly hears that the signallers' task is a thankless one, that the general standard of signalling in the Home Army is not up to the mark; it is also common knowledge that the work, after a time, becomes uncongenial to most men, that in war a signaller's responsibility is very great, and, what with day and night work, his task becomes an endless grind.

Those who are thoroughly acquainted with the work and training of signallers, have ceaselessly advocated their being

considered specialists pure and simple, to be trained year in and year out by the officer in charge of them. In the field the latter should merely detail signallers to companies as the situation demands, and the signalling "Department" would be as distinct from the companies as the machine gun section is now.

To keep up the present establishment required by Regulations, and to supply the divisional and brigade communication company, or section, with the requisite number of men, entails the training, year by year, of some 40 N.C.O.'s and men, a formidable task indeed in a home battalion. It has, therefore, been fairly demonstrated that the relations between the company and its signallers from a training point of view can hardly be considered as satisfactory. It would doubtless add to their efficiency if they, too, were housed together, instead of being scattered as at present.

STAFF SERGEANTS.—The armourer sergeant, the master tailor, shoemaker sergeant, orderly room staff, quarter master sergeant, pioneer sergeant, cook sergeant, and drum major form no part of the company's organization except for purely administrative purposes.

THE BANDS.—Bands are divided into two parts:—

(a) The drum and fife (or pipe) band is made up of 16 full drummers with a certain number of boys and acting drummers from the ranks, totalling roughly some 25 or 30 performers in all. In war time it no longer exists as a band, the complete personnel going to their companies and forming part of its fighting line strength. Undeniably it is the most popular form of martial music in existence, and is popular with officers and men, for whose pleasure, after all, it entirely exists.¹

(b) The band consists of:—A bandmaster (remains at home in time of war). A band sergeant (remains at the Base). Full bandsmen (21 in number, consisting of men and boys, usually in equal proportion, who are detailed to carry stretchers in war). Acting bandsmen (on loan so to speak from the companies; number varies). Boys—4 to 8 in number (not for active service).

It can be safely asserted that as a general rule a good band means a strong band; that the possession of a really high-class military band entails having, as a minimum, 50 or more men

¹ "There is no more exhilarating music than the music of the fife and drum. It is of the very essence of soldiering. A band inspires and pleases, but we hear bands anywhere. The drum and fife belong to the army. Only real soldiers can give the true speech to the drum and fife. No old soldier can hear the drums and fifes unmoved."—Extract from the writings of Mr. R. Blatchford.

and boys under training. It is idle to say that the average military band exists entirely for the Army; on the contrary, it almost solely exists for populous civilian centres, Exhibitions, and South Coast watering places. No one appreciates a bad band, and it is the aim and object of every band president and band-master worth his salt to get together a good band and to keep it well up to the mark musically and financially by means of well paid outside engagements. It is common knowledge too that the officers like the band so long as it plays well and they can hear it reasonably often, but the great mass of the soldiers dislike it; they see it going off to well-paid engagements just as they themselves march out to what they somewhat naturally perhaps consider dull and tedious forms of training. The authorised grants both in men and money are also inadequate to support a good band throughout and to keep it supplied with up-to-date music and high-class instruments. In foreign armies and in our own Brigade of Guards brass bands are allowed for a complete regiment, while in the Line every battalion—despite its slender establishment—is to be found with some 12 per cent. or more of its establishment devoting their time to music of one kind or another. There is also a political factor which sooner or later will have to be taken into serious consideration. Trades Unionism makes no secret of the fact that it is bitterly hostile to military bands, and it is only lack of political power at the present time which limits its enmity to threats and abuse of a system which in the opinion of its members allows the military to "cut" the prices of the civilian musicians. Whether the average bandsman is sufficiently trained in all the duties of a stretcher bearer, whether the test of their individual capabilities in administering first aid is severe enough, and whether they have sufficient practice on manœuvres under more or less active service conditions in the task assigned to them in war is beyond the scope of this article, but nevertheless one may perhaps be permitted to remark that, to judge by the lack of enthusiasm in the Aldershot Competition for this class of work, one would hardly feel warranted in giving a satisfactory reply.

WAR AND PEACE STRENGTHS COMPARED.

Before attempting to give an outline of the organization of the infantry of foreign armies it will perhaps be as well to dwell ever so briefly on certain points which are brought to light in a comparison of Peace and War Establishments.

Officers.

The fact that a home battalion on paper is only 4 officers under its war establishment appears on the surface to be extremely satisfactory; such however can hardly be said to be the case when it is remembered that on mobilization such

appointments as:—Brigade Communication Officer, extra A.D.C.s., mounted infantry, extra staff appointments have to be filled from the peace cadre. Thus one would not be far outside the mark in reckoning that every battalion would be short of 1 captain and 7 fully trained subalterns on the day of mobilization. Though peace time economy lies at the root of the difficulty the fact must not be overlooked that the existing arrangements for the mobilization of the mounted infantry make matters trebly worse by robbing battalions of a heavy percentage of the pick of their officers, N.C.O.'s, and men.

Non-Commissioned Officers.

A glance at Appendix A goes to show that a mobilized battalion has (inclusive of those at the base) 56 warrant officers, staff sergeants and sergeants in contrast to 42 in time of peace and of the latter two (the bandmaster and colour sergeant instructor of musketry) remain behind at home. Allowing that two sergeants return to the colours from the Reserve on mobilization, the discrepancy between war and peace is 14 in a Home battalion, 9 in an Indian battalion, and 8 elsewhere; but the disparity in the case of the first-mentioned does not end here. Reckoning 1 sergeant to the brigade communication section, 3 section sergeants or even more to mounted infantry and one sergeant to a Base Record Office, or to some other employment of a similar nature the deficiency still further increases till it is eventually found that no less than 19 full sergeants (or some 80 per cent. of the full peace strength) are required over and above the normal establishment. With eight fresh officers—many of whom will be quite untrained—with 19 newly promoted sergeants and with some 700 reservists fresh from civil life in the ranks of a mobilized battalion, the task of its commander and company leaders can hardly be called a light one.

Rank and File.

A careful examination of the state (A.F. B. 89)¹ of a certain unit reveals the fact that some 1,100 reservists in all are available for mobilization, and that 300 men on the peace strength are disqualified for service abroad by age in a battalion approximately 850 strong. Deducting these 300 as well as 100 of the rank and file who leave the battalion on mobilization for mounted infantry and other detached duties, it is seen that, of the 944 of the rank and file required in war, only 450 of the peace cadre remain—or less than 50 per cent; in the more usual case of a battalion considerably under peace establishment the percentage would drop to nearer 30 per cent. than 50 per cent. Of the 50 to 70 per cent. of newly imported men many are completely unknown even by name to their section commanders

¹This particular battalion was 850 strong in the early autumn of 1910.

and fewer still to the officers. In the event of a rapid mobilization followed in quick succession by field operations against a highly organized continental army, our company commanders would find themselves at a serious disadvantage in comparison to those of their opponents.

Recapitulation.

In the foregoing sections the writer has endeavoured to bring to light certain prominent weaknesses in connection with our peace organization, and his conclusions can be briefly summarized as follows :—

(a) That in peace time under the present system every company in a battalion has on its books certain N.C.O.'s and men who in war form no part of its fighting-line strength; these are roughly computed at :—

2 to 3 Warrant Officers, Staff Sergeants, or Sergeants.

12 to 15 Rank and File.

(b) That although battalions can be said to be sufficiently well provided with officers for all duties of peace, yet the large reduction made in their numbers on a general mobilization can hardly be contemplated with equanimity.

(c) That the present establishment of sergeants for battalions quartered at Home is very inadequate, when it is taken into consideration that modern military training tends year by year to become increasingly strenuous, that more than ever before is expected of our company and section leaders, while our short-service system means the drafting into the ranks on mobilization of large numbers of reservists unacquainted with their leaders and ignorant, through no fault of their own, of the latest changes in battle tactics and manœuvre. Does not then the fact that mobilization entails the posting to a battalion of some 7 untrained officers—or 25 per cent. of its strength—and of some 700 reservists—or 70 per cent. of its numbers—mean placing a terrible load of responsibility on the shoulders of the section leaders?

Granted that this is so, are we not courting disaster by placing a disproportionate amount of this load on the shoulders of sergeants who in most cases but a few weeks before were inexperienced corporals?

(d) As regards the rank and file little need be said. Questions which affect their positions as recruits, and their transfer to the Reserve, are fully dealt with hereafter.

**A BRIEF SURVEY OF THE ORGANIZATION AND STRENGTHS
OF COMPANIES AND BATTALIONS IN FOREIGN ARMIES IN
PEACE AND WAR.**

(vide Appendix B).

Germany.

There are approximately 620 battalions in the German Army; in most cases 3 battalions go to form one regiment, and of these latter 33 are quartered in Alsace-Lorraine, and are on a higher establishment than the remainder. For the sake of brevity details of those on the lower establishment will alone be submitted.

The Regimental Staff is kept distinct, and contains :—

- 3 officers;
- 1 paymaster;
- 3 N.C.O.s;
- 42 bandsmen;
- 11 tradesmen.

A battalion consists of 4 companies, each of which, in Peace, has, approximately, strength of :—

- 4 officers and 145 N.C.O.s' and men,
- and in war of 250 of all ranks, with 1 baggage wagon, 1 S.A.A. cart and 1 supply wagon, or 3 vehicles in all.

From a peace establishment of 18 officers and 570 N.C.O.'s and men a battalion in war time expands to 1,056 of all ranks.

It will be noticed that a German company in both peace and war is relieved of having on its books bandsmen, tradesmen, and details belonging to the machine gun section.

France

There are approximately 512 battalions in the French Army; as in Germany a certain number of units on the eastern frontier are kept on a higher establishment, but with these we need not concern ourselves.

The Regimental Staff is kept distinct and consists of, among others :—

- pioneers, 12;
- musicians, some 40;
- transport details (about 25 of all ranks);
- all staff sergeants;
- cyclists 4;
- orderlies 8.

Making, altogether, a total of 112 of all ranks.

A battalion, the headquarter staff of which comprises but 15 of all ranks, contains 4 companies, each of which in peace time consists of:—

- 4 officers;
- 1 warrant officer;
- 1 colour sergeant;
- 1 quarter master sergeant;
- 8 sergeants;
- 1 quarter master corporal;
- 16 lance corporals;
- 1 hospital orderly;
- 4 stretcher bearers;
- 1 tailor;
- 1 bootmaker;
- 2 drummers;
- 86 privates (approximate).

Total:—4 officers and 125 of other ranks.

It may be remarked here that a French (as in a German) company is relieved of its band, its transport men, a machine gun section, and any staff sergeants. The proportion too of officers and N.C.O's in peace time compared with that of war appears to be higher than in our Army.

Austria-Hungary.

There are, speaking roughly, in the Austrian Army, 400 battalions of infantry, 4 of which, plus the Regimental Staff, compose a regiment. Each battalion has 4 companies. In the Regimental Staff on a peace footing are included a band of 43, 3 officers for special duties such as relieving battalion or company commanders temporarily absent for any length of time, some staff sergeants, and servants, making a total of 74 men.

A company on a Peace footing, contains:—

- 1 cadet-probationer;
- 1 colour sergeant;
- 1 pay sergeant;
- 2 sergeants;
- 6 corporals;
- 6 lance corporals;
- 1 bugler;
- 1 drummer;
- 4 officers' servants;
- 70 privates.

Total:—4 officers and 93 men.

In war it expands to 4 officers and 235 men, of whom 4 are stretcher bearers and 4 are pioneers, the latter being taken away from companies in war, and grouped under a pioneer officer with the regimental staff.

Machine guns have nothing to do with battalions, but are trained as special units by themselves.

Russia.

The 208 Russian regiments each consist of 4 battalions, composed of 4 companies with a headquarter company. Machine gun detachments are organized in companies, and usually attached to regiments.

A Russian company in peace contains 3 or 4 officers and some 110 N.C.O.'s and men, of whom 2 are buglers, 6 are stretcher bearers, and 4 are specially trained scouts.

In war the officers remain the same, but the numbers of men are doubled.

Bulgaria.

The only point of importance in the Bulgarian infantry organization, so far as we are concerned here, is that in peace each regiment consists of a staff, a small transport squad, and two battalions which expand in war to a staff, a transport company, 4 battalions and a depôt battalion.

The strength of a company and battalion in war or peace can be compared on reference to Appendix B.

Roumania.

Each regiment has a non-combatant section consisting of tradesmen, musicians, etc. No further details of interest to us are given in the handbooks but reference should be made to Appendix B regarding peace and war strengths.

Summary of Conclusions.

A survey of the various handbooks dealing with foreign armies brings to light certain points which the writer has endeavoured to condense in the foregoing notes as well as in tabular form in Appendix B.

From these it will be seen that as regards officers and N.C.O.'s the most notable feature in the infantry organization of the four greatest military Powers in Europe appears to be the fact that in peace and war the establishment of officers and N.C.O.'s remains practically the same. The machine gun section is now considered to be a unit by itself in practice as well as in theory. On the other hand a comparison of the number of rifles in a company under both conditions leads one to think that the British company leader is very well off; at the same time it must not be overlooked that on the Continent the company is, it is believed, usually partially completed to full war strength during the higher forms of training, including manœuvres, by calling up the previous year's reservists.

SOME PROPOSALS FOR THE IMPROVEMENT OF, OR CHANGES IN, THE INFANTRY ORGANIZATION.

The Headquarter Company.

Allowing then that an unprejudiced reader of the foregoing pages can hardly have failed to agree that there seems to be a

really good case for the establishment of a headquarter company, yet, when a decision has to be made as to whether an eighth or an additional ninth company would best meet the case, the endless question of £ s. d. at once comes to the fore.

If a battalion organization, which includes seven companies plus one headquarter company, be adopted, no additional expense ought to be incurred; in this case the services of the commander of the eighth (or headquarter) company could be utilized as a wing commander in war and as an umpire, etc., in peace and those of his colour sergeant as a drill sergeant for the recruits or even as a provost sergeant. Moreover, the change could be easily and quickly effected.

On the other hand, on examining the nine company system it is at once seen that an extra pay sergeant has to be provided, and that additional N.C.O.'s of senior rank would be required for the eight firing line companies in view of the reductions caused by the withdrawal from companies of machine gun signalling, transport, officer's mess sergeants, etc. As regards the commander the difficulty might be overcome by making the senior of the two officers in charge of the machine gun section and signallers respectively responsible for the payment of the details on the books of the headquarter company.

The question as to whether the increases in N.C.O.'s demanded by the formation of this ninth company could be met can hardly be discussed within the limits of this paper, but it may well be observed in passing that the new regulations affecting the postings of colour sergeants to the staff of the Territorial Army may have a serious effect in time to come on the future prospects of a large number of deserving N.C.O.'s who, realizing that to obtain the pension of a colour sergeant is in their opinion more of a lottery than ever, may deem it advisable to leave the colours at the earliest possible moment or else utilize their attachment to the Territorial Army as a stepping stone to a good civilian billet. In view then of future savings in the non-effective vote brought about by this change it might perhaps in some way be found possible to allow each battalion at least one extra colour sergeant.

Suggested Establishment for a Headquarter Company.

A rough draft of a scheme for the establishment of a headquarter company in war and peace is therefore now submitted.

WAR.

1. Commander.
2. Pay sergeant.
3. All warrant officers & staff sergeants
(other than those left at the base).
4. Machine gun section complete.
5. Signallers (including officer and sergeant).
6. Transport—officer, sergeant, N.C.O.'s
and men, but not pack animal leaders.

7. Officers' mess—sergeant and 3 men.
8. Provost sergeant.
9. Cooks—Headquarter cooks (?)
10. Quartermaster's men, pioneers and storemen.

and possibly :—

11. Stretcher bearers.
12. Sanitary squad.

PEACE.

1. Commander.
2. Pay sergeant.
3. All Warrant officers and staff sergeants.
4. Machine gun section complete.
5. Signallers (including officer and sergeant).
6. Transport—sergeant and 3 men.
7. Officers' mess—sergeant only.
8. Provost sergeant.
9. Boys.
10. Bandmaster, bandsergeant, full bandmen.
11. A few selected old soldiers.

The Number of Companies in a Battalion.

Having decided on the personnel of the headquarter company, which, to avoid confusion, will hereinafter be called the headquarter section, it becomes necessary to fix on the number of fighting companies for a battalion.

Taking the various proposals there are found to be four alternatives, viz :—

- (1) The headquarter section and 8 companies.
- (2) The headquarter section and 7 companies.
- (3) The headquarter section and 6 companies.
- (4) The double company system.

Of these (1) and (2) have already been well discussed. (4) has been purposely omitted, and (3) therefore remains for careful consideration.

Of all the above many would naturally incline to (1) as being the least upsetting to the existing order of things. On the other hand, there is no question that the six company system has much in its favour.¹ To commence with, the number of

¹ Until 1866, the six-company battalion predominated in the Infantry of all European armies, but early in the seventies most States adopted the four-company battalion, Prussia having set the example in this respect as far back as 1812.

The French Chasseur battalions are now the only ones that consist of six companies, because their proposed independent employment, for instance, in mountain warfare, makes it more often necessary to detach small units than is the case in operations on more favourable terrain. (from "Tactics," by Colonel Balck, Vol. 1.)

companies contain a multiple of three, which of itself must be pleasing to any student of Clausewitz's theories, while the abolition, too, of the seventh and eighth companies will release a certain number of those valuable infantry assets—Subalterns and Sergeants, all of whom will materially help to fill up the blanks in the remaining six companies.

As has already been seen, the approximate paper strength of the various ranks available for the "fighting" companies in war and peace works out as follows:—

	Officers.	Colour Sergeants & Sergeants.	Rank & File.
WAR	21	38	814
PEACE	18	24	631

Therefore, in a battalion of six companies each of the latter would be of a strength somewhat as follows:—

IN WAR	IN PEACE
3 Officers (3 spare)	3 Officers.
1 Colour Sergeant.	1 Colour Sergeant.
5 Sergeants (2 spare).	3 Sergeants.
135 Rank and File.	105 Rank and File.

The writer is, however, strongly in favour of six companies, each of six sections, which, with existing establishments, will give each section a strength approximately as follows:—

IN WAR	IN PEACE
1 Sergeant.	1 Sergeant.
1 Corporal.	1 Corporal.
16 Privates.	22 Privates.

NOTE.—In peace time 3 sections in each company will only be commanded by corporals, unless the present establishment of sergeants is considerably increased.

The six section company has sundry gains, a few of which may with advantage be enumerated here:—

- (a) It gives a company commander a better command—one, moreover, which is divisible into threes.
- (b) It enlarges the command of the half company commander; even if he loses one section he still has two under his control.
- (c) It adds to the number of section leaders over and above those in the existing order of things, which means responsibility on more shoulders.
- (d) The increase in the number of sections will tend to make the change in personnel amongst the sections from peace to war felt less.
- (e) From a tactical point of view the gain too would appear to be on the side of the smaller sections, inasmuch as each would be more in hand, being smaller in numbers, and therefore easier to control.

The Close Season (March 1st to October 1st).

As has already been shown, the main idea of the "close" season as regards changes in personnel, whether in squadron, battery, or company, is to allow of more progressive training and to keep the amount of routine work in units to the very lowest possible limit during the collective training season.

In an infantry battalion quartered at home the following are the most usual changes which are extremely trying even to the least zealous of company commanders:—

(A) N.C.O.'S AND PRIVATES TIME-EXPIRED DURING THE TRAINING SEASON.

It is suggested that the same clause be added to the attestation papers and various re-engagement papers of N.C.O.'s and privates which will prevent them (if serving at the time in the Home Army) from leaving the colours during the period March 1st to October 1st; allowing that each individual obtains 2 months' furlough pending discharge, the period during which the expiration of every man's service will take place will be from December 1st to May 1st. There appears to be very little reason why the comparatively small number of annually time-expired N.C.O.'s and men from the Home Army should not be in a position to find employment during the period October 1st to May 1st, the more so as, unlike their comrades serving abroad, they have had the opportunity of keeping more or less in touch with the labour market. It would in any case seem possible to amend the Regulations so as to admit of individuals who, on October 1st in any one year, are due for discharge or transfer to the Reserve during the succeeding 12 months, proceeding to take up employment at the earliest convenient date after the conclusion of the Army Manœuvres.

(B) POSTINGS OF OFFICERS, N.C.O.'S AND MEN TO THE PERMANENT STAFF OF THE SPECIAL RESERVE OR TERRITORIAL ARMY.

The success which has attended the posting of the attached N.C.O.'s and men to Depôts in the autumn, as introduced 2 or 3 years ago by special War Office letter, has been most marked. Surely then some such system could be devised which would allow Territorial Army adjutants and N.C.O.'s, Special Reserve officers (regulars attached) and N.C.O.'s leaving, or returning to their units in the early autumn.¹ Some elasticity on the part of the Regulations, and a little forethought on the part of the administrative officers concerned should surely be able to effect this.

(B) THE ARRIVAL OF RECRUITS IN HOME BATTALIONS.

For some years now, in the battalion to which the writer belongs, a system of working hand in glove with the Depôt, as

¹Thus effecting a considerable financial saving to married officers whose battalions are moving in the autumn.

regards the particular date on which the posting of recruits takes place, has been adopted with excellent results.

For example :—During November and December each year the Depôt is emptied of all recruits to allow of the latter being passed off the square and completing their Table A in time for company training. Again, no further batches from the Depôt arrive till the end of April, thus preventing a certain number of N.C.O.'s being withdrawn to act as drill sergeants when their companies are engaged either at musketry or on field training. Similarly, the Depôt is again emptied of all possible recruits before the commencement of the Special Reserve training, thus permitting a large number of Depôt N.C.O.'s to attend the annual camp.

Although such methods are of considerable benefit to company commanders the fact still remains that recruits keep arriving month by month, either in batches or else, as in the case of Special Reservists, in dribbles. The worry and extra routine work occasioned by this system is detrimental to training and therefore calls for a remedy, partial or complete. It is suggested in the first instance that the Guards system of completing gymnastics before leaving the Depôt should be adopted WHERE POSSIBLE: if it is a question of accommodation, tents or hutments might be resorted to or, failing this, the rigid system of putting in 110 attendances at physical training could well be dispensed with in the case of elderly recruits or those specially well developed. In such cases recruits from the Special Reserve would be sent to the Depôt and not, as at present done, direct to the battalions for clothing, fitting, and completion of their gymnastic attendances. Commanding officers of home battalions could then arrange to have their recruits sent to them at the particular periods they were prepared to receive them and not before, while the company commanders would no longer have to find gymnastic instructors, the drilling of the recruits would be over sooner, gymnasia would become available for other purposes, and considerable reductions could possibly be made in the Army Gymnastic Staff.

(D) COURSES.

The fact of officers and N.C.O.'s being constantly and suddenly detailed to attend courses tends to a considerable amount of dislocation in the work and training of a home battalion. One ventures to think that, if units were told, say, on or about January 1st, exactly what number of officers and N.C.O.'s they would have to supply for such and such courses throughout the year, considerable benefit would accrue, and much routine work would ultimately be saved. The dates of courses might be fixed after the training programmes of all the commands have been examined. As an instance of inconvenience caused to units, the

fixing of February 1st as the date of assembly of the first mounted infantry class in each year might be cited as an example. In this case it is impossible for a proportion of the N.C.O.'s and men who have thus been relieved on returning to their units to have their annual furlough without missing their company training or musketry, since in many units it is either necessary or customary to give all ranks a minimum furlough of 6 weeks' duration.

(E) DETACHED DUTIES. E.G.:—MARKING AT BISLEY, GATE-KEEPERS AT MILITARY TOURNAMENTS, PAGEANTS, ETC.

Such duties as mentioned above considerably interfere with progressive training, and it seems a matter for consideration whether duties of this nature should not be supplied by the regular N.C.O.'s of the Special Reserve, or, failing that, by commissionaires or ex-soldiers.

The Paucity of "Rifles" in Companies of a Home Battalion During the Training Season.

Apart from the constant changes in, and the weakness of, the authorised establishment of a home battalion there are other causes which during the training season reduce the strength of companies out of all proportion to their establishment. Chief among these is the abnormal number of men withdrawn for service in the bands.

Now, there can be few, if any, infantry officers who do not desire a strong, efficient, and well equipped drum and fife, or pipe, or bugle band, but the point is, can we with our small army and limited recruiting potentialities afford from every point of view to spare all these men from the ranks for musical training? Would it not be better in our Army for each unit to possess a really strong, smart, efficient, and well equipped drum and fife band while retaining perhaps an extremely small and efficient string band for the purposes of sociability and amusement strictly within the limits of the garrison? Such an arrangement would leave the door open for considerable economies in upkeep of bands as well as in a reduction of the non-effective charges caused by bandmasters' and bandmen's pensions, as well as releasing two or three full ranks for War Training.

Signallers perhaps, make the next largest hole in the training strength of a company. To train and keep efficient an establishment of 32 signallers is no mean task, and implies nearly 40 N.C.O.'s and men being withdrawn from their companies throughout the greater part of the year. The slightest reduction in their establishment would be welcome from the company commanders' point of view.

The Paucity of Sergeants.

In previous pages it has been shown how serious is the depletion of the section commanders on mobilization. Only this year the writer noticed a company at its annual training, with two sections commanded by corporals and two by lance corporals. The only remedy appears to be to increase their numbers, and this means expense. It seems that the only possible way to do this, other than by increasing the Establishment Vote, is to eliminate gradually all 21 years' men and full bandsmen from the Army, thus permitting the pensions so saved being used for the cost of augmentation in the establishment of sergeants.

The truth is that an increase in the number of sergeants is the most pressing need of the infantry at the present time, and is likely to remain so till something is effected.

Depletion of Companies of Trained Soldiers both on Mobilization and in Peace Time, by Foreign Drafts.

It has been shown that on mobilization a home battalion requires in reservists nearly 70 per cent of its strength to complete it to its War Establishment.

General Kuropatkin in his treatise on the Manchurian War again and again dwells on the importance of having a high percentage of regulars to reservists. He points out that most of the latter take some time to settle down, and that they are torn apart from their families at a time when they have begun to think their military liability is over, that they lack the training, fitness, and "esprit de corps" of the serving soldier, while, in the case of elderly men, they are apt to put on flesh.

It is well to remember that in the South African War most of the British reservists never went into action till at least 6 weeks or even 2 months had elapsed from the time they once again donned the uniform of their corps.

On the other hand, suppose the Expeditionary Force were suddenly mobilized for important operations nearer home. Would this unwieldy influx of reservists be appreciated by company commanders? It is now suggested that the present somewhat inelastic system of only selecting men 20 years of age on mobilization be abolished, and that the company commanders in conjunction with the medical authorities be allowed to select any men under that age whom he feels he can fully depend on. By this means a considerable increase in the numbers of serving soldiers in units might be made on mobilization. To quote verbatim the Russian Generalissimo:—

"According to the opinion of competent officers who served in the war (which I fully share), other conditions being equal, the more regular soldiers there were in a unit the more it could be relied on in battle."

The *Times* military correspondent also wrote a few weeks ago:—

"The tendency of the day in Germany is to trust rather to quality than to quantity and to place confidence in young troops highly disciplined and trained, and led by good active professional cadres, rather than in masses of men long absent from the Colours."

Those in close touch with the young soldier who see him throughout the war-training season, who know how he shoots, how he marches, how he "sticks it," the life he leads in barracks, the full extent of his enthusiasm, energy and good will during the longest marches of the Autumn Manœuvres, should be fully qualified to say whether they wish to have him on active service, regardless of whether or not he has reached a regulation age.

Turning to the question of foreign drafts, the regulation which lays down the conditions of service for India aims a heavy blow at the enthusiasm of the company commander. A slight amendment in the age limit, say to 19½ years, having regard to the vastly improved health and well-being of the Army in India during the past few years, besides a lowering of the service qualifications from one year to nine months, would considerably assist matters.

It has been said that the N.C.O.'s are the backbone of the British Army. If this is so we cannot be too careful over their selection and this in itself becomes a task of the greatest complexity when a heavy call is made on a company for men for India; it is then that its commander finds the very men he has had his eye on for promotion during the coming winter are one and all taken from him.

Committees on Organization.

It is impossible within the limits of this essay or even for one individual to attempt to lay bare all the weaknesses of the present organization and to submit sound arguments for radical changes. At the same time one ventures to think that if each brigade or division had a standing committee, changed annually, of specially selected officers with power to call in witnesses (officers or N.C.O.'s) to probe into all questions connected with infantry establishments and organization in war and peace, reduction in correspondence, and other questions connected with its well-being, much good would result. It cannot be possible for an officer who has been for some years away from a battalion to realize all the difficulties and worries that beset the company or detachment commander day in day out. The educational value of such committees as suggested above must be very great and if well presided over could hardly fail to lead to excellent results. It is hoped too that some such scheme would have the further advantage of decreasing the number of

reports which have to be furnished so frequently, and thus relieve commanding officers of what, to many of them, is an uncongenial task coming, as so many of these reports do, in the very midst of the training season.

If, however, in the near future changes are to be made in Infantry Organization, and they are surely needed, let the most be made of the experience and ideas of the many excellent company commanders our Army contains. To call upon an officer who has trained and commanded a company for 3 months in 5 years is useless. Things in these days move so fast, while different conditions exist in every station, that the advice of officers well seasoned in command of companies is most needed. As an instance, during the present training season, and in the very middle of it too, we have seen certain battalions unexpectedly called upon to pass an exceedingly large proportion of their older soldiers prematurely to the Army Reserve. Had the authority responsible for this order seen the face of the Signalling Officer of a certain battalion, who, thanks to the stroke of a pen, saw his 12 best signallers depart in the very middle of the training season, he would surely have rescinded the order and arranged for these men to leave two or three months later. It is these little incidents that bring discouragement to the heart of a regimental officer, nor can it in any way be attributed to callousness on the part of the responsible party. It is simply due to the fact that he is (unconsciously perhaps) out of touch with regimental life.

CONCLUSION.

In conclusion the writer feels he must disclaim any wilful intention of descending, in the preceding pages, to carping criticism or dogmatic assertion. His sole aim has been to attempt to lay bare some of the weaknesses inherent in the present organization, as daily experienced by company commanders, and to suggest, however crudely, certain remedies.

Modern war demands above all else perfect organization; this of itself entails constant and sometimes sweeping changes, but only as the result of careful forethought, much consideration and, if possible, personal experience. If our organization is to become and to remain as near perfect as anything can be we must be prepared to ride roughshod over all sentimental considerations, fads, and personal predilections.



APPENDIX "A." **War and Peace (Home) Establishments Compared.**

HEADQUARTERS.	WAR.			PEACE (HOME).			REMARKS.
	Officers.	W. Oftrs. Staff Sgts. Sgts.	Drums, Rank and File.	Officers.	W. Oftrs. Staff Sgts. Sgts.	Drums, Rank and File.	
Lieutenant Colonel	1	—	—	1	—	—	
Major	1	—	—	1	—	—	
Adjutant	1	—	—	1	—	—	
Quartermaster	1	—	—	1	—	—	
Transport Officer	—	—	—	—	—	—	
Signalling Officer	—	—	—	—	—	—	
Sergeant Major	—	1	—	—	1	—	
Quartermaster Sergeant	—	1	—	—	1	—	
Orderly Room Clerk	—	1	—	—	1	—	
Pioneer Drummer	—	1	—	—	1	—	
Sergeant	—	1	—	—	1	—	
Sergeant Cook	—	1	—	—	1	—	
Transport Sergeant	—	1	—	—	1	—	
Signalling Sergeant	—	1	—	—	1	—	
Sergeant Shoemaker	—	—	7	—	—	3	
Drivers, Transport, 1st Line.	—	—	3	—	—	1	
For Spare Animals	—	—	2	—	—	7	
Orderlies for Medical Officer	—	—	6	—	—	—	
Batmen	—	—	—	—	—	—	
Total	4	9	18	4	9	11	
ATTACHED.							
Armourer	—	1	—	—	1	—	
Drivers, A.S.C. 2nd Line Transport	—	—	10	—	—	—	
R. A. M. C.	1	—	5	—	—	—	
Total Head-quarters (including attached)...	5	10	33	4	10	11	
MACHINE GUN SECTION.							
Subaltern	1	—	—	1	—	—	
Sergeant	—	1	—	—	1	—	
Corporal	—	—	1	—	—	1	
Privates	—	—	12	—	—	12	
Drivers	—	—	2	—	—	1	
Total Machine Gun Section	1	1	15	1	1	14	
COMPANY.							
Major or Captain	1	—	—	1	—	—	
Subalterns	2	—	—	2	—	—	
Colour Sergeant	—	1	—	—	1	—	

1 shown with Machine Gun Section.
 Marching sick (usually an old soldier).

APPENDIX "A"—Continued.

[illegible]

APPENDIX "B."
Tabular Statement showing Strengths of Battalions and Companies in Foreign Armies in Peace and War.

NATIONALITY.	COMPANY.						BATTALION.						REMARKS.
	PEACE.		WAR.		Percentage of PEACE Strength of all ranks to that of WAR.	PEACE.		WAR.		Percentage of PEACE Strength of all ranks to that of WAR.			
	Officers.	N.C.O's and Men.	Officers.	N.C.O's and men.		Officers.	N.C.O's and men.						
Germany ...	4	142	5	259	57 ½%	18	570	—	1056	55 ½%	Signallers and M.I. are non-existent.		
France ...	3	125	4	250	50 ½%	—	500	—	1050	51 ½%	" "		
Austria- Hungary ...	4	93	4	222	40 ½%	18	400	19	960	40 ½%	" "		
Russia ...	3	110	4	222	46 ½%	15 or 16	448	17 or 18	980	46 ½%	4 trained semaphorists per company are required.		
Bulgaria ...	4	97	3	235	37 ½%	24	456	14	1063	43 ½%			
Roumania ...	—	80	4	244	33 ½%	—	—	18	985	—			
Italy ...	3	110	5	196	56 ½%	16	445	24	1019	—			

MILITARY CRYPTOGRAPHY.

By Captain M. MUIRHEAD, R.F.A.

CIPHER writing, though used in diplomacy, trade, and other mediums, rises, perhaps to its highest importance in its military uses. Despatches, which, written in their ordinary form, might, if they fell into the enemy's hands, change the destiny of a nation, will, when disguised in the form of a clever cipher, defeat the most skilful, at any rate for some time, in the endeavour to probe their meaning. I say advisedly, "for some time," as it would be going too far to say that any cryptogram is incapable of being solved, if only time is given. "What the wit of man can devise, the wit of man can search out," is a true saying. It is impossible in a short article like this to do more than touch on a few simple ciphers and their solution. Cipher writing and the solution of cryptograms is a fascinating study, and one that may repay the student.

During the Indian Mutiny British officers found their letters and dispatches falling into native hands, or being read by their native servants. The knowledge thus gained was handed on to the enemy. A simple but effective form of cipher ended these risks; letters and notes were written in Greek characters; the natives, of course, could not understand a word of them, although the words were English.

A few forms of secret writing (we cannot dignify them by the name of ciphers), are given below, but for military uses a cryptogram must be capable of being sent by telegraph. Most of the old forms of secret writing involved the use of instruments, and if these were lost by either correspondent, the key was lost with it, and the cipher rendered useless.

1. Each correspondent had a wooden roller of exactly equal size. A band of paper was wound round one roller by the sender, and the message written on it lengthwise. It was then unwound and was unreadable until rolled anew on a roller the same size. This is easily capable of solution by trial.

2. The "*Grille*."—Each correspondent had a square of cardboard. In each of the two, square holes were punched at random, but so as to correspond in the two squares of cardboard. The letters of the message were written one in each of the holes, and the remainder of the paper filled up with any letters. The real message could not be read till another piece of cardboard with corresponding holes was placed on the paper.

T	E	A	R	F	U	L	
A	B	C	D	E	F	G	T
H	I	J	K	L	M	N	H
O	P	Q	R	S	T	U	U
V	W	X	Y	Z	A	B	N
C	D	E	F	G	H	I	D
J	K	L	M	N	O	P	E
Q	R	S	T	U	V	W	R
X	Y	Z	A	B	C	D	S

3. The "Two Word" Cipher.—

A secure cipher, but not suitable for ordinary military purposes owing to its length. Take any two long words (*e.g.*, *Tearful thunders*) and put them one along the upper edge, and the other down the side, of a series of ruled squares. Fill in the squares with alphabet as above.

A letter in the text can be represented in more than one way in the cipher, by different pairs of letters, *e.g.* A could be represented by T T, or U N, or R S.

The two words to be used are of course agreed on beforehand by the correspondents.

During the American Civil War, both sides speaking the same language, nearly all despatches or orders which had to be sent to a distance, were in cipher. The following system was employed by the Federals with satisfactory results, probably owing to the lack of experts in the science of cryptography among the Confederates.

The words of the despatch were divided up into a number of columns with 6 words in each column.

Starting from a prearranged point (say the 2nd column from the right) and, working in a direction agreed on beforehand, the cipher was made out as follows:—

The	4th	Div.	will	camp	on
Monday	night	June	27th	1861	at
Red	river	and	in	case	of
attack	will	retreat	on	Strasburg	which
it	will	hold	till	joined	by
Gen.	Jackson's	Div.	wine	cavalry	defeat

Any blanks were filled up by odd words, *e.g.*, wine, cavalry, defeat; these would be easily recognised in the clear as such.

Cipher.—"Cavalry joined Strasburg case 1861 camp wine till on in 27th will Div. hold retreat and June Div. Jackson's will will river night 4th Gen. it attack Red Monday The defeat by which of at on."

The deciphering was simple; the decipherer starting and working upwards six words (or an arranged number), and knowing his starting point was the second column from the right of the original dispatch.

This form of cipher is easily and quickly deciphered when the key is known, and it fulfilled at that time the chief rôle of a cipher, *i.e.*, to make the solution sufficiently difficult to enable its mission to be accomplished before the cipher is solved.

Whether the solution of a cryptogram, composed of letters or figures, or both, is easy or difficult depends, to a great extent, on its length. A short cryptogram of only a few signs is very difficult. The reason for this we shall see later. On the other hand, the shorter a cryptogram composed of *words* is, the easier it is, as a short message lends itself to few combinations and permutations.

The "Agony" column of the *Times* almost daily affords practice in the solution of short cryptograms. These are usually easy cipher systems, but difficult of solution on account of their brevity.

The simplest form of cipher is where the letters of the alphabet in the "clear" (*i.e.*, the original message) are replaced in the cipher by other letters of the alphabet, and not by signs, figures, etc. For instance, we decide that a, b, c, and d are represented in cipher by w, x, y and z, and so on.

This may occur in two forms:—

1. Where the letters of the cipher are in the same order as those of the alphabet which they represent, *e.g.*, a, b, c, d and e are represented in cipher by c, d, e, f and g respectively, and so on through the alphabet. This was the method of Julius Cæsar.
2. Where the letters of the cipher are taken at random from the alphabet to represent the letters of it, *e.g.*, a, b, c, d and e are represented in cipher by m, h, g, q and z respectively.

Case 2 also admits of a further variation. We see that although a, b, c, d and e are represented in cipher by letters taken at random, *viz.*, m, h, g, q and z, yet these are constant, and wherever *m* occurs in the cipher *a* occurs in the text and so on.

The variation consists of this: *m* in the cipher may represent *a* in the text in one place, but may represent g, p, x, or what you please in another part of the text.

The above three cases of cipher are the only ones proposed to be dealt with in this article. They are the most frequently used, and once the principles of their solution are mastered, many of the difficulties of deciphering other forms of cryptograms may be overcome.

Let us consider Case 1 (Julius Cæsar's cipher). Suppose our text is: *When shall we meet?*

We decide the letters in the text shall be represented in cipher by the letters two in advance of them in the alphabet, as follows:—

ABCDEF GHIJ KLMNOP QRSTUV WXYZ
 alphabet
 CDEFGH IJ KLMNOP QRSTUV WXYZ AB
 cipher.

Then our cryptogram will be:—

WHEN SHALL WE MEET text

YJGP UJCNN YG OGGV cryptogram

To solve a cryptogram of this kind (it matters not whether the cipher letters are in rear or advance, or how many in rear or advance of the letters of the text they represent, so long as they are in order), write under each of the letters of the cryptogram the alphabet, downwards, in its order from the letter of the cryptogram, as follows:—

Y	J	G	P	U	J	C	N	N	Y	G	O	G	G	V
Z	K	H	Q	V	K	D	O	O						
A	L	I	R	W	L	E	P	P						
B	M	J	S	X	M	F	Q	Q						
C	N	K	T	Y	N	G	R	R						
D	O	L	U	Z	O	H	S	S						
E	P	M	V	A	P	I	T	T						
F	O	N	W	B	Q	J	U	U						
G	R	O	X	C	R	K	V	V						
H	S	P	Y	D	S	L	W	W						
I	T	Q	Z	E	T	M	X	X						
J	U	R	A	F	U	N	Y	Y						
K	V	S	B	G	V	O	Z	Z						
L	W	T	C	H	W	P	A	A						
M	X	U	D	I	X	Q	B	B						
N	Y	V	E	J	Y	R	C	C						
O	Z	W	F	K	Z	S	D	D						
P	A	X	G	L	A	T	E	E						
Q	B	Y	H	M	B	U	F	F						
R	C	Z	I	N	C	V	G	G						
S	D	A	J	O	D	W	H	H						
T	E	B	K	P	E	X	I	I						
U	F	C	L	Q	F	Y	J	J						
V	G	D	M	R	G	Z	K	K						
W	H	E	N	S	H	A	L	L						
X	I	F	O	T	I	B	M	M						

(the answer)

It will be seen our cryptogram solves itself by the letters recurring. So much for that—the commonest form of cipher.

Next let us consider Case 2, where the text is represented by other letters of the alphabet *taken at random* (and not in order,

as in Case 1), but where a certain letter of the text is always represented by the same letter in the cipher.

Let us take the following:—

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 alphabet
 C N S Z M K H F X V P D E I L A Y J W B G O Q R T U
 cipher

Take the following text out of Field Service Regulations, Part 2, Page 140: "Code Messages are messages condensed by the use of arbitrary words to express the sentences or words of the original. They are coded and decoded by employing at both sending and receiving offices the books of the code adopted.

"The main object of employing code is to ensure economy rather than secrecy.

"Cipher messages are messages expressed in Arabic figures or in letters having a secret meaning."

Put into cipher, the above reads as follows:—

S L Z M E M W W C H M W C J M E M W W C H M W
 S L I Z M I W M Z N T B F M G W M L K C J N X B J C J T
 Q L J Z W B L M R A J M W W B F M W M I B M I S M W
 L J Q L J Z W L K B F M L J X H X I C D B F M T
 C J M S L Z M Z C I Z Z M S L Z M Z N T M E A D L T
 X I H C B N L B F W M I Z X I H C I Z J M S M X O X
 I H L K K X S M W B F M N L L P W L K B F M S L Z M
 C Z L A B M Z B F M E C X I L N V M S B L K
 M E A D L T X I H S L Z M W X W B L M I W G J M
 M S L I L E T J C B F M J B F C I W M S J M S T
 S X A F M J E M W W C H M W C J M E M W W C
 H M W M R A J M W W M Z X I C J C N X S K X H
 G J M W L J X I D M B B M J W F C O X I H C
 W M S J M B E M C I X I H

In the English language (calculated from ten thousand letters in an ordinary manuscript) the letters occur in the following order of frequency. E T O A N I R S H L D C U M P F (W Y) G B V K X (J Q Z.) Those in brackets occur an equal number of times. Therefore the letters of the cipher should occur in like proportion and should represent those in the clear opposite them in the table below.

Now look at our order of frequency (i.e., count up how many times each letter occurs in the cipher). It works out as follows:

54	M=E	10	H=L
31	W=T	9	E=D
26	L=O	8	T=C
21	I,J=A	7	K,N=U
20	B,C.=N	6	A=M
18	Z=I	4	G=P
16	S=R	3	D=F
14	X=S	2	O,Q,R.=W,P
12	F=H	1	V.=G

The figures on the left of each column represent the number of times the letters opposite them occur in the cipher.

Now look through the cryptogram and notice any combinations of the same letters occurring frequently—small combinations for preference. We notice the combination B F M occurs seven times.

According to our table this combination should represent N H E. This obviously suggests "the." Let us put B=T. Although in our table of frequency B should represent N, of course the table is not infallible, though the longer the message the more infallible the table.

Much has to be done by experiment in deciphering, without the key. Near the bottom of the cipher we find the combination M B B M, which should equal "ette." This may be parts of two words, but it suggests the word "better" or "letter." Let us put J=R. Now we have—

M=E
B=T
F=H
J=R

Looking through again we find the combination C J M occurring frequently. According to our suppositions this should represent "Cre" (we have not yet found out what C represents), which looks like "are." Let us put C=A.

About two-thirds of the way down we find a combination containing many of the letters we have taken on trial, viz. J C V F M J B F C I, which should equal R A T H E R T H A.

This gives a whole word (rather), and assures us we are on the right track. The next word looks like (and the combinations in which the word "rather" is used confirms us) "than." Put I=N.

Now we have—

M=E
B=T
F=H
J=R
C=A
I=N

All through the text I is frequently coupled with X; X I appears many times. Let us try X=I, making the word "in."

Lastly, take the letters at the end of the second line, which contain most of our suppositious letters K C J N X B J C J T, which comes out as—A R—I T R A R—.

A great stretch of imagination is not needed to suggest the word "arbitrary."

So we work on. I need say no more about the lines on which to work for solving a cryptogram of this nature.

Now let us consider the variation to Case 2, where the letters of the text are represented in the cipher by letters of the alphabet taken at random, but where a certain letter in the cipher represents a certain letter in the text in one place, but a different letter of the text in another place.

This occurs when two or more alphabets are used in forming the cipher. It is best explained by giving an example of enciphering.

The Vigènère cipher :—

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
B	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a
C	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b
D	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c
E	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d
F	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e
G	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f
H	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g
I	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h
J	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i
K	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j
L	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k
M	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l
N	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m
O	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n
P	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Q	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
R	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
S	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
T	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
U	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
V	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u
W	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v
X	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Y	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x
Z	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y

In using the above cipher a key word is necessary. Let it be the word "code," and our message be as follows:—

"The rules to be observed in the use of code and cipher messages and for protecting the cipher employed are given in the respective code and cipher books which are issued on mobilisation as may be considered necessary." (From Field Service Regulations, Part II., page 141.)

To put the message into cipher with the word "code" for key, write the key word above the letters of the message in the following manner :—

Cod e|Code|Co de|Code|Code|Co de|C ode| Co de|Co de|C ode
The rules|to be|obse|rved|in the use|of code and cip

Cod e|Code|Cod e|Co de|C ode|Code|Cod e|Co de|Code| Code
her messages and for protecting the cipher|empl

Code|Cod e|Code|Co de|C ode|Code|Cod e|Cod e|Co de|Code
oyed|are given|in the res|pectiv|e code and cipher

Code|C ode|Co de|C ode|Cod e|C ode|Code|Code|C od e|Co de
books which are issued on mobilization as may be

Code|Code|Co de|Code|Cod
considered necessary.

Now take the first letter of the key word and the first letter of the message above, viz., C and T. Follow down the alphabet on the left side of the chart in the vertical column until we reach T. From T strike sideways in the horizontal column until we reach the letter directly under C (in the alphabet at the top). That letter is V, and that is the cipher letter representing T in the text. Now, in the text, take the next letter T with which we have to deal. The letter above it in the key word is again C, and again, in the cipher, T will be represented by V. The third T in the text, however, has D above it in the key word. Proceeding in the same way as before, it is found that T is now represented in the cipher by W. Beginning at the first letter of the text, and going steadily through letter by letter, we get the following cipher of our message :—

V V	H V	W Z	H W	V C	C I	Q P	V I	T J	H H	K B	W L
G I	V I	Q T	F S	F S	D R	F Q	L T	J S	U Q	G G	V E
S	V E	P R	I S	T D	U S	V S	F X	K B	J X	J S	F M
R V	H V	G A	S P	Q M	H H	C F	H K	K J	H R	K B	W L
G F	H W	R S	F X	K J	H G	Q R	H E	P R	F M	R V	H V
D C	R O	U K	K M	E V	D V	G W	V W	W S	G S	P A	R F
K Z	L D	C H	L S	P O	V Q	C M	E I	E C	Q W	K R	H V
G R	Q I	E S	V W	C F	B						

It has been laid down by Captain Valerio, of the French Artillery, and by Major Kasiski, of the Prussian Army, that :—

1. In every ciphered text two like pairs of letters are the product of two like groups of letters cryptographed with the same alphabets.

2. The number of cipher letters in the intervals between two like pairs is a multiple of the number of letters of which the key word is composed, or the number of alphabets used in enciphering the message in question :

By (1) is meant that, although in the cipher system we are at present discussing, it is quite unsafe to assume that a particular letter in the text is always represented by the same letter in the cipher, yet between *pairs* of like letters in the text and pairs of like letters in the cipher there is a constant relationship on which it is safe to build.

(2) explains itself, except that in counting up the letters between any two like pairs, one of the pairs themselves should be added to the number.

Let us look at our cryptogram. The pairs of like letters that occur more than once are those below, and the figures opposite them are those denoting the number of letters separating these like pairs.

HV 72=4×18	WL 72=4×18	FX 40=4×10	HV 48=4×12
HV 44=4×11	FS 0=0	KB 28=4×7	KJ 16=4×4
HV 48=4×12	JS 28=4×7	FM 44=4×11	VW 40=4×10
HW 92=4×23	VE 4=4×1	RV 44=4×11	
VI 12=4×3	IS 6=3×2	HV 44=4×11	

Looking at the figures, we see 4 is plainly the most recurring factor. Let us admit, then, that 4 alphabets were used in making the cryptogram. As a matter of fact, we know this is correct, as the key word is CODE—of 4 letters.

Then take the cryptogram, and divide it into rows of 4 letters each:—

V V H V	W Z H W	V C C I	Q P V I
F S D R	F Q L T	J S U Q	G G V E
K B J X	J S F M	R V H V	G A S P
G F H W	R S F X	K J H G	Q R H E
E V D V	G W V W	W S G S	P A R F
E C Q W	K R H V	G R Q I	E S V W

T J H H	K B W L	G I V I	Q T F S
I S V E	P R I S	T D U S	V S F X
Q M H H	C F H K	K J H R	K B W L
P R F M	R V H V	D C R O	U K K M
K Z L D	C H L S	P O V Q	C M E I
C F B			

The letters of the same rank in each row will all belong to one alphabet. For instance, V F K G E E; W F J R G K; V J R K W G will all belong to one alphabet, and V S B F V C, Z Q S S W R, C S V J S R will all belong to another alphabet, and so on.

Firstly, then, it is necessary to collect all the letters of each of the 4 alphabets, and tabulate them.

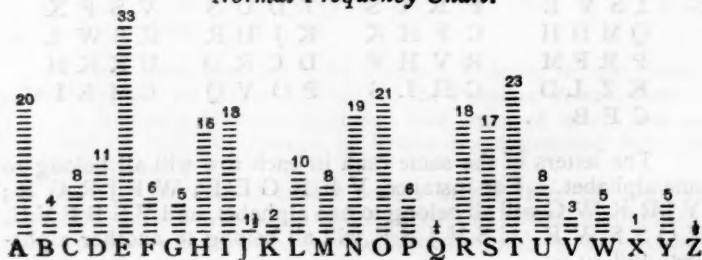
1. V F K G E E, W F J R G K V J R K W G Q G G
O P E T I Q P K C K P C R C G T K D P Q
V K U C
2. V S B F V C Z Q S S W R C S V J S R P G A R A S
J S M R Z F B R F V H I D J C O T S B K M
3. H D J H D Q H L F F V H C U H H G Q V V S
H R V H V H F L B W I H H L V U H R H
F F W K E
4. V R X W V W W T M X W V I Q V G S I I E
P E F W H E H M D L S K V S I S R O Q
S X L M I

Now make a table of frequency for each alphabet, *i.e.*, 4 tables.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
(1)	-	-	4	1	3	2	6	-	1	2	6	-	-	-	-	4	4	3	-	2	1	3	2	-	-	-
(2)	2	3	3	1	-	3	1	1	1	3	-	-	2	-	1	1	1	5	8	1	-	4	1	-	-	2
(3)	-	1	1	2	1	5	1	13	1	1	1	3	-	-	-	-	2	2	1	-	2	6	2	-	-	-
(4)	-	-	-	1	3	1	1	2	5	-	1	2	3	-	1	1	2	1	5	1	-	5	5	3	-	-

Make a chart of each alphabet marking above each letter in short lines the number of times it occurs. This represents the frequency table graphically. Also make a chart of the normal frequency table, as per diagram below.

Normal Frequency Chart.



Now slip each alphabet along under the normal alphabet till the figures, graphically, correspond (as far as possible).

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

It must be observed in doing this that though the numerical superiority of E in the English points to immediately placing the longest column of the cipher tables under E in the normal frequency tables, yet this is not always correct. It is better to follow more the *general* form of the frequency chart, rather than the *particular* form of any one letter. Thus it can be noticed in the normal frequency chart that on either side of E we get 3 comparatively short columns, and then a long one. The form of these 9 columns is a good clue in solving this form of cipher.

In the first alphabet the form is fairly obvious. G occurs the most number of times, and has on either side of it 3 short columns, and then a long one. If we place G, therefore, in this cipher alphabet under E in the normal frequency chart the other letters should correspond.

In 2 the form is not so obvious, but as S occurs the greatest number of times, let us put it equal to E in the normal, and the other letters of this alphabet accordingly. In 3 the form is not very obvious, but H occurs by far the most frequently. Let us put H=E (in the normal).

In 4 there are 4 letters all occurring five times each. If, however, we look at I, we shall find the form we seek.

The 3 short columns on either side of it, and then a long one, are unmistakable. Let us therefore put I equal to E in the normal, and other letters of this alphabet accordingly.

I will not go through the whole of the cipher in solving it. We know the first word of the text is "the."

Let us see how the first, second, and third alphabets above pan out by this method of solving.

In the first alphabet we put $G=E$ according to the correspondence graphically of our cipher chart and the normal chart (*i.e.*, the table of frequency). This will make V in the cipher equal T in the text. That we know is correct.

In the second alphabet we put $S=E$. This makes V (the letter in the cipher whose meaning we are trying to discover) equal to H . That is also correct.

In the 3rd alphabet we put $H=E$. This is correct.

We have therefore found the first three letters of the cipher, *viz.*, $V V H$, to mean $T H E$, which is correct.

In the fourth Alphabet we put $I=E$. This makes V in the cipher equal R in the text. This is quite correct, the first two words of our text being "The Rules."

And so we go on. Trial and supposition necessary, but working on the lines above, eventual success is certain, and that in a surprisingly short space of time. To conclude, the mastery of the above methods will enable anyone to solve almost any alphabetical cypher of a tolerable length. A military despatch would be probably much longer than any of those excerpts I have quoted, and correspondingly easier to solve.

There are many variations of the above ciphers requiring slightly different applications of these methods.

It is impossible to go into these in an article of this kind, and they take much study to apply quickly.

Cryptograms falling into British hands would probably be in a foreign language. A knowledge of the language is, of course, a great help in solving the cryptogram, but is not essential.

The table of frequency differs in different languages—notably German—from our English language. A table of frequency for the Latin and Teutonic languages is not difficult to compile, and with a little trouble anyone can do it for himself.



STRENGTH AND ORGANIZATION OF THE ARMIES OF FRANCE, GERMANY, AUSTRIA, RUSSIA, ITALY, MEXICO, AND JAPAN.

Compiled by the United States War Department. Extracts reprinted by permission.

TABLE SHOWING HIGHER ORGANIZATIONS EXISTING IN TIME OF PEACE.

NO MILITIA, RESERVE, OR TERRITORIAL TROOPS ARE INCLUDED.

Country.	Army corps.	Divisions.	Cavalry divisions.	Infantry brigades.	Cavalry brigades.	Field-artillery brigades.
France	21	47	8	92	38	21
Germany	23	48	1	106	49	45
Austria ¹	16	33	5	58	19	18
Russia.....	31	56	23	143	246	61
England ²	0	6	0	15	4	6
Italy	12	26	3	51	8	12
Mexico	0	0	0	0	0	0
Japan	0	19	0	39	2	3
United States	0	0	0	0	0	0

¹ Common army only.

² Possibly more.

³ Figures are for regulars in the British Isles only. In addition there are 14 divisions, 42 infantry brigades, 14 field-artillery brigades, and 14 mounted brigades of territorial troops in the British Isles. In India there are 9 divisions, 9 field-artillery brigades, and 8 cavalry brigades.

TABLE SHOWING PEACE STRENGTH, BY ARMS OF THE SERVICE.

ONLY OFFICERS AND MEN WITH THE COLOURS ARE CONSIDERED.

Country.	Infantry.	Cavalry.	Field artillery.	Foot artillery.	Coast artillery.	Technical troops.	Train.	Sanitary troops.	Total peace strength. ¹
France ²	379,640	75,510	76,419	4,446	7,244	18,020	10,520	6,123	634,638
Germany.....	404,765	73,368	69,735	24,673	2,000	26,708	8,038	6,615	634,320
Austria ³	194,123	47,541	33,012	6,040	3,100	10,507	5,070	4,307	327,580
Russia.....	580,000	115,000	94,110	18,056	14,152	37,448	(?)	(?)	1,200,000
England ⁴	151,261	30,716	34,849	628	14,965	9,098	6,772	5,668	255,438
Italy.....	167,006	24,000	27,000	7,000	5,000	11,000	2,500	3,729	288,409
Mexico.....	30,326	7,318	1,912	(?)	(?)	687	215	(?)	31,008
Japan.....	149,402	4,585	18,618	6,869		16,727	11,427	3,454	230,000
UNITED STATES.									
Regulars.....	27,370	13,540	5,426	0	19,993	3,449	0	4,117	51,361
Organized militia.....	97,035	4,167	4,765	0	7,266	2,539	0	2,146	119,66
Total.....	124,405	17,707	10,221	0	7,249	5,988	0	6,263	201,021

¹ Includes miscellaneous organizations, staffs, school detachments, etc.² Includes troops stationed in Algiers and Tunis and such colonial troops as are stationed in France.³ Common army only. For Landwehr, see study on Austria.⁴ Regular army only. Territorial Force (British Isles) numbers 315,408. Canadian permanent force and organized militia numbers 67,037.⁵ Based on Army List, 20th November, 1910. The Porto Rican Regiment is counted as infantry. Technical troops include Engineers and Signal Corps. 8,000 recruits included in total. 5,000 Philippine Scouts are not counted.

TABLE SHOWING PERCENTAGES OF SEVERAL ARMS OF TOTAL PEACE STRENGTH.

Country.	Infantry.	Cavalry.	Field artillery.	Foot artillery.	Coast artillery.	Technical troops.	Train.	Sanitary troops.	Miscellaneous.
	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
France.....	59.77	11.69	12.65	0.70	1.14	2.83	.55	0.96	9.01
Germany.....	63.81	11.56	10.99	3.88	.73	4.21	1.26	1.04	2.02
Austria.....	59.34	14.51	10.07	1.84	.64	3.20	1.54	1.31	7.55
Russia.....	48.33	9.58	7.84	1.50	1.17	3.12	(?)	(?)	28.46
England.....	69.21	8.10	13.56	.24	5.85	3.56	2.65	1.98	4.85
Italy.....	57.90	8.32	9.36	.42	1.73	3.61	.86	1.29	14.31
Mexico.....	63.60	22.86	5.97	(?)	(?)	2.05	.37	(?)	5.25
Japan.....	64.95	6.34	8.22		2.99	7.27	4.96	1.51	3.76
UNITED STATES.									
Regulars.....	33.64	16.64	6.66	0	24.57	4.23	0	5.06	9.20
Organized Militia.....	81.09	3.45	2.21	0	6.06	2.12	0	1.79	1.65
Total.....	61.70	8.20	5.07	0	13.55	2.97	0	3.11	4.80

TABLE SHOWING FIGHTING STRENGTH OF THREE ARMS ON
MOBILIZATION.

EXISTING ORGANIZATIONS ONLY CONSIDERED.

Country.	Infantry rifles.	Cavalry sabres.	Field guns.	Sabres per thousand infantry bayonets.	Field guns per thou- sand in- fantry bay- onets ¹ .	Fully trained reserves available for passing from peace to war foot- ing.
France ²	618,450	66,750	2,936	107'93	4'74	2,300,000
Germany.....	633,000	76,800	3,866	120'85	6'10	4,000,000
Austria ³	420,300	37,800	1,854	89'93	4'41	1,600,000
Russia ⁴	973,152	111,235	4,432	114'91	4'55	3,800,000
England ⁵	135,020	18,000	1,170	111'09	8'66	215,000
Italy.....	300,000	20,880	1,470	89'99	4'90	1,350,000
Mexico ⁶	53,760	14,016	176	260'71	3'27	None.
Japan ⁷	228,000	14,550	954	63'81	4'18	1,000,000
UNITED STATES.						
Regulars ⁸	39,800	15,225	144	384'46	3'63	None.
Organized Militia ⁹	167,060	5,800	200	84'73	1'19	None.
Total ¹⁰	206,860	21,025	344	101'76	1'66	None.

¹ No deductions made for horse guns.

² For all existing units, for mobilization in France, see separate study.

³ Common army only. Figures are approximate. (See study.)

⁴ The peculiar situation of Russia makes it impossible for her to assemble her total force upon any one theatre of war.

⁵ Regulars only.

⁶ Total strength in ranks considered. The deductions which should be made for non-combatants are not accurately known. Laws for compulsory service exist and might be put into effect in war.

⁷ Japan forms a very large number of new organizations which are not considered here. Neither are the special troops in Formosa and elsewhere considered. The foot artillery mobilizes an additional number of heavy field guns, possibly 1 gun per thousand rifles.

⁸ Porto Rican Regiment and Philippine Scouts are excluded from this table.

⁹ The infantry in the Organized Militia is obtained by reducing all incomplete regiments to the standard organizations. Separate companies and cadet corps, etc., have not been considered.

The Organized Militia has no complete regiments of Cavalry. The figures are obtained by multiplying the number of troops by the troop fighting strength.

All batteries of the Organized Militia are included, although 6 batteries (24 guns) have not yet reached the stage where it is deemed expedient to issue modern material. Only a few batteries are organized into complete battalions and there are no regiments.

¹⁰ This assumes that organizations can be raised to the war strength. As a matter of fact trained men are not available for this purpose, and if they were, clothing and equipments are not available for passing to the war strength.

NOTE.—For probable initial mobilization see studies on several countries.

The plan on page 1336 shows the above graphically.

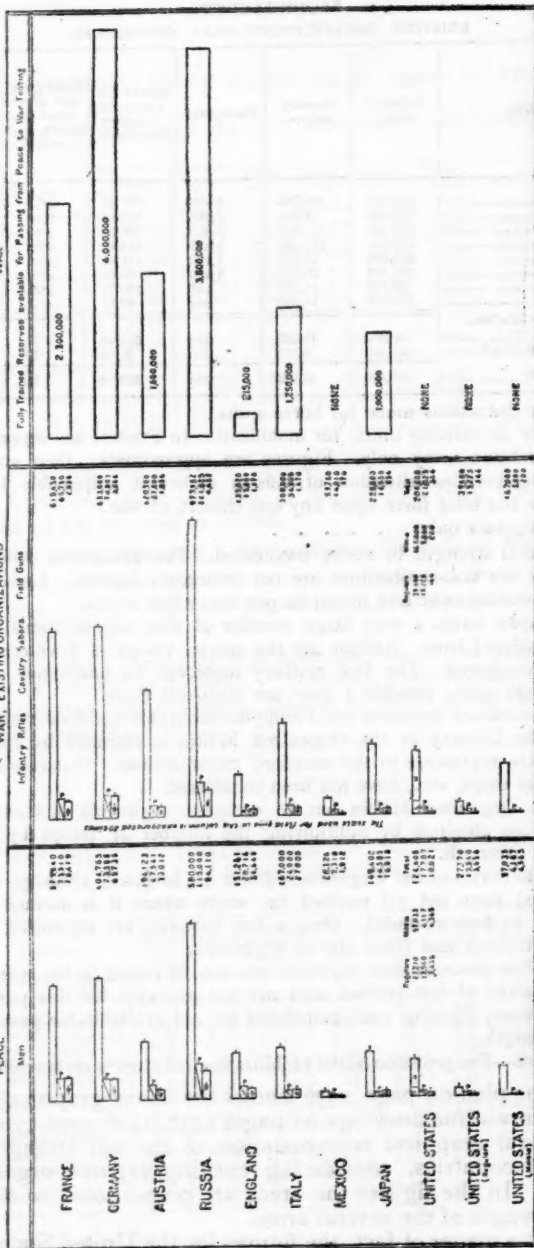
The outline drawings on pages 1337, 1338, and 1339 give an additional graphical representation of the war strength of the several countries, considering existing regular organizations only. In the figures the areas are proportional to the actual war strength of the several arms.

As a matter of fact, the figures for the United States are too large, for the reason that trained men are not available for passing to the war footing which the drawings represent.

PLAN SHOWING STRENGTH OF THE THREE ARMS IN PEACE AND IN WAR.

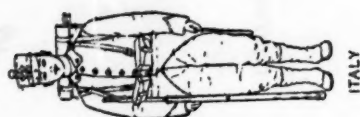
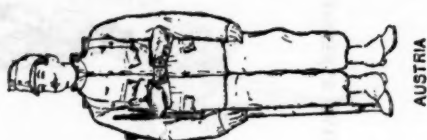
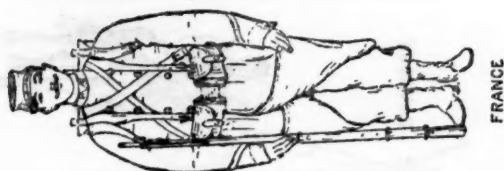
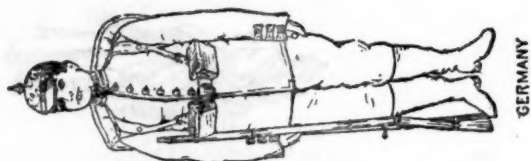
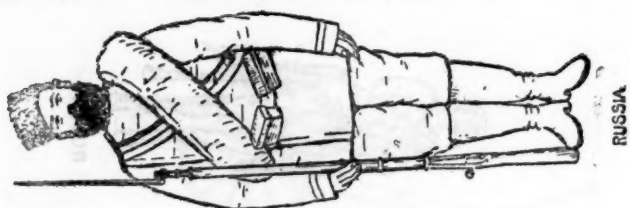
—1910—

WAR, EXISTING ORGANIZATIONS



NOTE.—In this plan only organizations existing in peace have been considered. Nearly all foreign countries have reserve organizations which are about equal in strength to the regular troops. For England the figures are for British regular troops only.

COMPARATIVE STRENGTHS: INFANTRY



COMPARATIVE STRENGTHS: CAVALRY



RUSSIA



GERMANY



FRANCE



AUSTRIA



ITALY



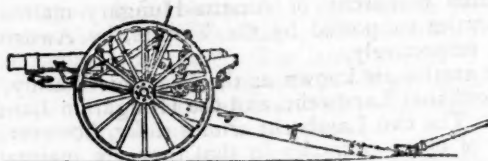
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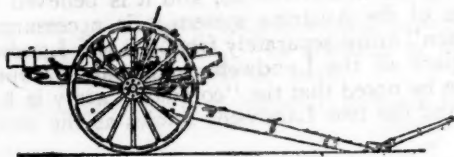
ENGLAND



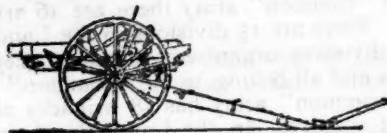
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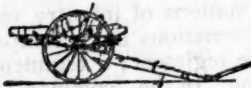
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AUSTRIA



ITALY



JAPAN



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In war the battery numbers about two officers and men, counting about 200 rifles. The typical army corps thus has a war strength of about 25,000 infantry rifles.

AUSTRIA-HUNGARY.

The dual monarchy of Austria-Hungary maintains three separate armies supported by the Empire, by Austria, and by Hungary, respectively.

These armies are known as the "common" army, the Austrian (Cisleithane) Landwehr, and the Hungarian Landwehr, respectively. The two Landwehr armies differ, however, from the Landwehr of other countries in that they are maintained with the colours in time of peace. At the same time their organization is somewhat miscellaneous, and it is believed that to gain a clear idea of the Austrian system it is necessary to consider the "common" army separately from the two Landwehr armies. To save space all the Landwehr troops are grouped together. It may also be noted that the "common" army is known as the first line, and the two Landwehr armies as the second line.

Higher Organization.

In the "common" army there are 16 army corps with 33 divisions. There are 15 divisions in the Landwehr. There are 5 cavalry divisions organized in peace; they are attached to army corps and all belong to the "common" army.

The "common" army has 58 brigades of infantry and 19 brigades of cavalry. In the Landwehr there are 30 brigades of infantry and probably 6 of cavalry. There are 16 brigades of field artillery in the common army, organized in peace.

The above is believed to be correct, although some authorities give a greater number of brigade organizations for infantry and cavalry.

Infantry.

The formations of infantry vary, but it may be said that the typical formations are 4 companies to the battalion; 4 battalions to the regiment; 2 regiments to the brigade; 2 brigades to the division. In the "common" army there are 110 regiments with 467 battalions. In the Landwehr there are 68 regiments with 214½ battalions.

The strength varies greatly in peace. Some of the Landwehr companies have as low as 5 officers and 50 men. For the "common" army the usual strength is 5 officers and 92 men to the company.

The total peace strength is as follows:—

						Officers.	Men.
"Common" army	...	...	...	...	...	9,812	184,313
Landwehr	...	...	...	...	...	4,609	52,581
Total	...	...	...	...	...	15,419	236,894

In war the battalion numbers about 1,000 officers and men, counting about 900 rifles. The typical army corps thus has a war strength of about 28,800 infantry rifles.

Field Artillery.

The Austrian field artillery is reported by Veltzé to be in a transitory stage. It is known that it has recently been rearmed and the current Austrian periodicals point toward a reorganization and considerable increase. The latest budget is not, however, available and there are no reports on file giving any definite clue as to what is to be done regarding reorganization.

The present organization is as follows:—

	Brigades.	Regiments.	Battalions.	Batteries
"Common" army	16	62	131	309
Landwehr			8	16

The peace strength varies greatly; the usual battery strength is 5 officers and 90 or 109 men. In addition to the battery strength regiments have a reserve of men.

The total peace strength is as follows (minimum figures):—

	Officers.	Men.
"Common" army	1,728	31,284
Landwehr	120	1,840
Total	1,848	33,124

It is understood that in war the regiments mobilize a large additional number of batteries, but no definite information is available.

The entire subject of the war strength of Austrian artillery is little understood by foreigners. . . . The opinion is ventured that the war organization corresponds, so far as concerns artillery, to that of Germany. This would give 3 batteries and a light ammunition column to the battalion,¹ the strength of batteries being about 150 men. This would require the mobilization of an extra battery for the majority of battalions and the division of the existing regimental ammunition column into two columns, one for each battalion of the regiment.

As to the number of pieces in the battery on a war footing the consensus of opinion seems to point to 6. With the old material it was 8 with 6 officers and 190 men.

It is believed that the "transitory state" already mentioned is responsible for the lack of reasonably accurate information on this subject.

Fortress Artillery.

The fortress artillery is divided between coast artillery and the garrisons of land fortresses as distinguished from coast fortifications. It is all part of the "common" army. The total is 6 regiments with 19 battalions and 72 batteries. The total number of officers and men on a peace footing are 383 and 7,757, respectively.

¹ Corresponds to a British field artillery brigade. Ed., R.U.S.I.

There are 19 companies serving as coast artillery.

Definite data as to the total peace strength of these troops are not available. Estimating the strength as slightly greater than that of other fortress organizations would give 100 officers and 2,000 men.

The war strength is probably 250 men per company.

Admitting the strength assigned the coast artillery, the total peace strength of the 53 companies (4 regiments) of fortress artillery is 283 officers and 5,757 men.

This artillery garrisons the various land fortifications and furnishes siege and heavy field artillery as well as, probably, some machine guns, to the mobile forces.

The war strength of batteries is 6 officers and about 250 men.

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Cavalry.

The typical formations of cavalry are: Six squadrons to the regiment, 2 regiments to the brigade, 2 brigades to the division.

There are 19 brigades with 42 regiments and 252 squadrons in the "common" army, and 6 brigades with 16 regiments and 101 squadrons in the Landwehr. The peace strength of squadrons in the "common" army is nominally 5 officers and 171 men; some of the men are, however, detached to form pioneer and other detachments at headquarters.

The strength of squadrons of Landwehr is 5 officers and 78 men for the Austrian and 4 officers and 69 men for the Hungarian.

Total strength and distribution are as follows:—

							Officers.	Men.
Common army	...	...	...	...	...	...	1,671	45,870
Landwehr	...	...	...	...	...	...	604	7,913
Total ...							2,275	53,783

The war strength of squadrons, both armies, is 5 officers and 171 men, counting 150 sabres. Each regiment also forms a reserve squadron and a dépôt squadron; cadres exist for these in peace.

Technical Troops.

These troops have a variety of organizations. The most important are the pioneer battalions. There are 15 of these with 5 companies each and cadres for reserve companies.

All technical troops belong to the common army. The total of all technical troops is as follows: 562 officers, 9,945 men.

The peace strength of pioneer companies is 5 officers and 112 men.

In war these troops are enormously expanded. In the first place each battalion of pioneer troops forms 2 extra companies, then each company is raised to about 5 officers and 250 or more men.

Train Troops.

There are 16 so-called divisions (battalions). They all belong to the "common" army.

The total is 444 officers and 4,626 men.

These troops are capable of enormous expansion in war, but no definite data are available.

Sanitary Troops.

The peace strength is 1,247 officers and 3,060 men, all belonging to the common army.

The war strength is not known.

Total Peace Strength.

The total peace strength is 31,328 officers, including a certain number of officials classed as officers, and 363,919 men.

Total War Strength.

It is impossible to give any definite accurate statements as to Austria's maximum mobilization or even as to her initial mobilization. Estimates as to the total number of fully trained men subject to call vary.

Following the conservative plan which has been used in estimating the strength of other countries, it may be said that Austria has 2,000,000 fully trained men subject to call.

Assuming that the *initial* mobilization would be confined to raising *existing* organizations to a war footing we would have:—

"Common" army:			Landwehr:		
Infantry battalions	...	467	Infantry battalions	...	214½
Batteries field artillery	...	309	Batteries field artillery	...	16
Squadrons cavalry	...	252	Squadrons cavalry	...	101

This would give the following fighting strength of the three armies:—

"Common" army:			Landwehr:		
Infantry rifles	...	420,300	Infantry rifles	...	192,850
Field guns	...	1,854	Field guns	...	96
Cavalry sabres	...	37,800	Cavalry sabres	...	15,150

It will be noted that the above figures do not consider the use of any fortress artillery as field artillery, nor do they consider the formation of additional organizations of any arm.

Conditions of Service.

Service is compulsory and liability extends from the nineteenth to the forty-second year of the citizen's age.

Service is divided into numerous categories. The most important of these are as follows: Common army, 3 years with the colours and 7 years in the first reserve; during the latter period the men are subject to call for three periods of training of 4 weeks each. Landwehr, 2 years with the colours and 10 years in the first reserve; during the latter period the men may be recalled for instruction under varying and complex rules.

ITALY.

The Italian military system is complicated. It is composed of the regular army, the mobile militia, and the territorial militia. The two latter categories are not constantly under arms, and in reality form a kind of reserve (Landwehr) into which men pass after service with the colours. Both the mobile and the territorial militia are composed of all arms of the service. The available data as to the strength of the militia are so conflicting as to make it impossible to give any reliable figures as to the composition and strength of the several arms of the service in those forces.

For these reasons this study will confine itself to the regular army and will consider the militia only as a reserve for bringing units up to strength on mobilization.

The regular army was reorganized in 1910. The law affecting this reorganization is available, hence the number of units and of officers given in this study is accurate. The detailed budget under this law is not, however, available.¹ Moreover, there is a system in vogue of giving extensive (unlimited) periods of leave to the men so that the full number provided by the budget is always short (in men *actually* with the colours) by several thousand. The figures as to the total strength of the several arms are, therefore, to be regarded as approximate. Nevertheless, the figures given offer a very close approximation to the relative strength of the several arms.

Higher Organization.

Commanders and staffs of four armies exist in time of peace.

¹ The figures have since been published. See July JOURNAL, page 944.—Ed., R.U.S.I.

There are 12 army corps, 25 divisions, and 3 cavalry divisions organized in peace.

The general officers are as follows:—Five generals, 49 lieutenant-generals, 97 major-generals, and 4 medical officers with rank of general officer.

Infantry.

The typical formations are 4 companies to the battalion, 3 battalions to the regiment, 2 regiments to the brigade, 2 brigades to the division. Battalions of "Bersaglieri" and "Alpine troops" have 3 companies each, while regiments of these troops have 3 or 4 battalions.

Apportioning all existing organizations among the 12 army corps would give $114\frac{1}{2}$ companies to the corps.

There are 51 brigades, 116 regiments, 362 battalions, 1,374 companies.

Each regiment has a "depot."

Under the new law the total number of infantry officers is 7,189.

A close approximation to the total number of officers and men of infantry is 167,000 for the peace footing.

The war strength of units is difficult to estimate. A considerable part of the infantry is composed of cyclists and of Alpine troops. The war strength of these organizations runs from 120 to 150 men per company. On the other hand, the infantry of the line probably numbers 250 men to the company. The maximum war strength of the army corps is about 25,000 infantry rifles.

Artillery.

All artillery officers are on one list. The organization is somewhat complicated, no less than 13 separate establishments appearing in the new law.

The main sub-divisions are the field artillery and the fortress artillery. The latter is composed of coast artillery and of fortress (land) artillery proper.

There are 9 headquarters of field artillery and 5 of fortress. These headquarters correspond to brigades.

The total number of officers of artillery under the new law is 2,242. The law provides that the increase in captains shall be made gradually so as to be complete July 1st, 1912. Dividing the artillery among the several classes we have:—

Field Artillery.

There are 36 regiments of field artillery, with 72 battalions, 193 six-gun batteries, 36 train companies, and 36 depots (train companies form light ammunition columns). There are 2 regi-

ments of heavy field artillery, with 10 battalions, 20 batteries, and 2 depots.

There is 1 regiment of horse artillery, with 4 battalions, 8 batteries, 4 companies of train and 1 depot.

There are 2 regiments of mountain artillery, with 8 battalions, 24 batteries, and 2 depots.

Totalling the above, we have:—Forty-one regiments, 90 battalions, 245 batteries, 40 train companies (light ammunition columns), 41 depots.

At least a portion of the depots are used in connection with the mobile militia. In addition to the above, there are various remount establishments, "directorates," etc. These organizations are fixed under the law by royal decree, but no definite data are available. It will be seen that, deducting 6 batteries for the 3 cavalry divisions, about 20 batteries are available for each of the 12 army corps.

If the heavy batteries have 6 guns each, the number of guns per corps would be about 120.

The peace strength of batteries is not definitely known. The Italian artillery is being rearmed with modern guns and the strength of organizations somewhat increased.

Under the old organization the strength of batteries varied between 3 officers and 90 men and 4 officers and 141 men.

The total peace strength is about 27,000 officers and men and is probably being increased.

The war strength probably follows the German organization, at least for the new matériel, viz., 5 officers, 150 men.

Coast Artillery.

There are 3 regiments of coast artillery, with parts of 2 regiments of fortress artillery actually employed as coast artillery.

The total number of companies of coast artillery, including those of fortress artillery employed as coast artillery, is 41.

The peace strength of companies is 3 officers and 107 men. The total peace strength of the coast artillery, including headquarters detachments, is about 5,000 officers and men.

The war strength of companies is 5 officers and 200 men.

Fortress Artillery.

There are 7 regiments, but parts of two of these regiments are actually employed as coast artillery.

The total number of companies actually employed as fortress artillery is 57.

One regiment of fortress artillery is supposed to be trained as siege artillery (the Tenth).

The regiments of fortress artillery are the Sixth, Seventh, Eighth, Ninth, and Tenth; the Third and Fifth are the mixed regiments.

The peace strength of companies is 3 officers and 107 men.

The total peace strength of fortress artillery, including detachments, is about 6,500 to 7,000 officers and men. The war strength of companies is 5 officers and 200 men.

According to Veltzé, matériel exists at Alessandria, Mantua, and Pianezza for forming 3 groups of 9 batteries each of mobile artillery.

Cavalry

There are 8 brigades with 29 regiments and a certain number of depots.

The total number of cavalry officers under the new law is 985.

In peace each regiment has 5 squadrons with a nominal strength of 4 officers and 155 men each. The total peace strength is thus about 24,000 officers and men.

It appears that in war each regiment would have 6 squadrons with 5 officers and 133 men each, counting 120 sabres.

Technical Troops.

The engineers have various establishments, headquarters, etc.

There are 6 regiments, 24 battalions, 79 companies, 6 depots. The total number of engineer officers is 610.

The peace strength varies, the usual strength is 3 officers and 110 or 120 men per company.

The total peace strength is about 11,000 officers and men.

In war, companies have from 200 to 250 officers and men.

Supply Train.

There is one company for each of the 12 army corps. The total peace strength is about 2,500 officers and men. The war strength is unknown.

Sanitary Troops.

The new law provides 763 medical officers. According to the *Almanach de Gotha* the number of uncommissioned officers and men of the Sanitary Corps in 1909 was 3,729.

Gendarmes.

The police might, in war, be employed to a limited extent. Some authorities go so far as to think they would all be so employed. They actually form an integral part of the army.

There are 12 so-called legions, with 671 officers and about 26,000 men. About 4,000 of these men are mounted. The remainder are dismounted. It is probable that in war the carbineers would mobilize one infantry brigade, numbering about 7,000 officers and men.

General Remarks.

In addition to the troops enumerated there are numerous special formations, schools, etc.

As has already been indicated, many of the "depots" are supposed to be used in connection with the mobile militia.

For example, it is supposed that no fewer than 672 officers and 8,640 men of the regular infantry, already enumerated, are used for the mobile militia.

Total Peace Strength.

The total peace strength of the regular army in 1909-10 was 13,942 officers and 274,467 men, but it is doubtful if more than 250,000 men were actually with the colours at any one time.¹

Total War Strength.

The complex system and the custom of giving indefinite leave to untrained men render it difficult to estimate Italy's strength in fully trained men. On paper she could mobilise 3,500,000 men. A conservative estimate would seem to be 1,500,000 *fully trained* men.

Assuming that the *initial* mobilization would be confined to existing organizations of the regular service, the fighting strength of the three arms on *initial* mobilization would be:—

Infantry rifles	...	...	...	...	...	...	...	300,000
Cavalry sabres	...	...	...	...	...	...	...	20,880
Field guns (with probably an additional 162 heavy field guns manned by fortress artillery)	...	...	...	...	...	...	...	1,470

Colonial Troops.

In addition to the troops already mentioned, Italy maintains in her African possessions 132 officers and 4,530 men; of the latter, 660 are Italians and the remainder natives.

Conditions of Service.

Service is compulsory, and liability extends from the twentieth to the thirty-ninth year of the citizen's life. Service with the colours is nominally for three years, but as the budget is seldom sufficient, many men are released with one or two years' training. These pass from the colours to a form of leave status, in which they serve to complete a total period in the regular army of eight or nine years.

The men then pass into the mobile militia, from whence they go into the territorial militia. During their stay in the category of the "congé illimité," as well as in the militia, the men are subject to calls for instruction—30 days per year for the leave status and mobile militia, 30 days in 4 years for territorial militia. Actually, training periods for the militia have, due to insufficient budgets, only been undertaken since 1909.

(¹) See page 1356.—Ed. R.U.S.I.

THE WAR IN THE MEDITERRANEAN.

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I. THE PROVINCE OF TRIPOLI.

The province of Tripoli extends along the Mediterranean coast for a distance of some 900 miles, and is supposed to have an area of 386,116 square miles. It consists of Tripoli proper; the plateau of Barca or Benghazi (Cyrenaica); and the oases of Fezzan, and Ghadames.

Frontiers.

The western frontier, bordering on Tunis, which has recently been demarcated by a French and Turkish Commission, passes west of Ghadames leaving that place in Turkish territory and then inclining south-east to Ghat. An agreement was reached some years ago by which the Turks and the French agreed not to occupy Janet. A neutral zone was thus established round that place. The agreement appears, however, to have been more than once disregarded by the Turks, and in 1909 some French "méharistes" entered Janet as a protest against the Turkish action.

South-east of Ghat, the frontier is undefined, and has recently been the subject of dispute between France and Turkey [See September, 1911 JOURNAL, page 1232]. The French, basing their claims on the Anglo-French agreement of 1909, assert that Tripoli does not extend south of the Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N). The Turks, on the other hand, have declined to recognize this agreement, and have even claimed Tummo, Tibesti, Borku, and the region of Kauar and Bilma as far south as Lake Chad. In support of this claim they have recently occupied Ain Galaka in Borku. Much of this country is, however, already in effective occupation of the French; Agades has a permanent garrison; Air and Bilma have both been "cercles administratifs" since 1906; while further east French detachments have more than once occupied Ain Galaka (in 1907 and again in 1908).

A writer in *L'Afrique Française* (September, 1911) contends that the southern boundary should run in such a way as to leave the crest of the Tummo hills in French territory, since the main line of communication between Abesher and Algeria (via Janet and Wargla) passes along the summits of this range; further, that Janet, at the junction of the above route with the caravan track which runs northwards from Zinder, must be in French hands, in order that the traffic passing through it from Central Africa to Algeria may not be diverted to Tripoli. Similarly, he urges that the French must retain Borku in order to be able to prevent the importation of arms from Benghazi through the oasis of Kufra.



The frontier between Benghazi and Egypt is generally taken to run from Sollum to west of Jerabub, but the Turks have lately encroached eastwards over this limit.

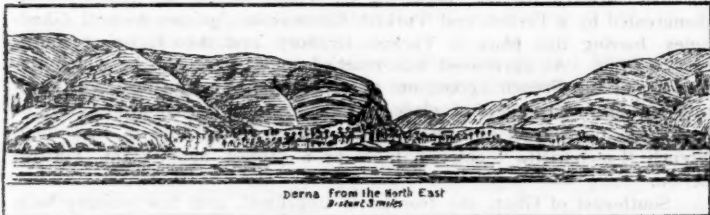
The Coast Line.

Tripoli has a seaboard of some 1,100 miles. The chief indentation is the Bay of Sidra (Syrtes Major) the western shore of which is a salt-marsh over 100 miles in length.

The coast of Tripoli is imperfectly charted and difficult of access owing to the numerous banks and shoals which extend far out from the shore. It is not, therefore, at all favourable for disembarkations.

The following description of the coast from east to west, written by the late Admiral Sir H. Smyth in 1854, stands true to-day for the greater part of the coast. ⁽¹⁾

"In the seaboard of this arid space there are the spacious harbours of Tebruk and Bombah, with several smaller havens for coasters. Passing the cove at Ras-er-Tyn (Chersonesus) between it and Benghazi, is the border of the mountainous tract called Jebel Akhdar. . . . On the margin of this space there are several small ports, but the only one resorted to is Derna; vessels from Alexandria and Tripoli call there to em-



bark honey, wool, wax, and butter. In the bight between the points Ras-el-Hilal and Cape Rasat is Marsa Susah (Apollonia), a mere boat cove, though once the important city of Cyrene. On the hills above, at the height of 1,900 feet, its vestiges are to be seen from seaward; and from thence to Benghazi are extensive ruins of the opulent cities of Dolmeltah (Ptolemais) Taukrah (Teuchirah) and other members of the Pentapolis.

"Between Cape Rasat and Mesratah is the Gulf of Sidra, the once dreaded "Syrtis Major," the navigation of which even Strabo thought it audacious to attempt. . . . Our researches have deprived this extensive bight of its terrors, and shown that, while it is comparatively free from danger, it is hardly worth the visits of shipping, there being in the whole space but one place deserving of being called a port, and even that fit only for small vessels. Such is Benghazi, an insignificant fortified town. . . .

"From the Great to the Lesser Syrtis, now the Gulf of Khabs (Gabes) the coast of Tripoli offers little for intercourse by sea except the harbour of Tripoli itself. . . . The coast, however, for the most part low and shelving, is pretty bold too, many parts affording good anchorage, as the north wind rarely blows home, and boats may generally find refuge in the little ports ("marsa") Zoraik, Ziliten, Ugrah at the mouth of the Wadi Khahan, Lebidah (Khomis, Leptis Magna), Ligatah, Tripoli Vecchio, Zuara, al Biban, and Zarzis. These creeks are mostly the result of the action of the sea and atmosphere on a friable shore, and the

⁽¹⁾ "The Mediterranean," a Memoir, Physical, Historical, and Nautical. By Rear-Admiral Sir W. H. Smyth, K.S.F.D.C.L.

barriers are ridges of rock parallel to the line of the coast, which have withstood the attack."

Harbours.

Of the above mentioned harbours, the three most suitable for shipping, going from east to west, are:—

MARSA TEBRUK.—This inlet is a little more than three-quarters of a mile wide at the entrance, and maintains nearly the same width throughout. The harbour affords perfect shelter in 5 to 7 fathoms from all winds excepting those from the south-east to east. (See inset map.)

GULF OF BOMBAH.—The bay is formed by Tank Point projecting south-east towards the small island of Menelaus. There is a good anchorage on the north side of the bay only open to the east. (See inset map.)

TRIPOLI.—The harbour of Tripoli is accessible for vessels with a draught of 22 feet. The entrance is encumbered by rocky shoals which extend right across, leaving only a narrow and intricate channel. There is a good anchorage, in summer, in 12 to 17 fathoms 600 yards from the shore north-west of the fort. This anchorage must, however, be left on the first appearance of bad weather from the north-east or north-west. Within the harbour there is an extent of about half a mile over which there are four or five fathoms. The bottom is hard sand and indifferent holding ground.

Landing in boats on the southern side of the harbour, during strong northerly winds, is often dangerous. The rise and fall of tide is about two feet, sometimes increased to five feet when the wind is from the offing. The currents in the roadstead are at times strong, but irregular and uncertain.

The harbour defences consist of Spanish Fort (also called Pink Fort), a masonry tower armed with 3 old Krupp guns, Fort Burj-el-Trado, close to the lighthouse; Fort Sidi Shahab (also called the Hamidieh Fort) on the eastern side of the harbour; and an earthwork known as the Sultanieh Fort on the coast west of the harbour. The armament of all these works is of obsolete pattern.

DERNA and BENGAZI are little more than open roadsteads.

The Relief of the Country.

The province of Tripoli may be divided into three distinct zones: (1) The coastal plain, (2) the plateau, and (3) the mountainous zone which lies between the plateau and the plain.

THE JEFARA.—The plain, known as the Jefara, occupies the north-west of the province, and rises gradually from the sea level to a height of 1,000 feet at the foot of the walls of the plateau.

A writer in the *Revue Francaise* (1) describes it as follows:—

"The Jefara, or low ground, is protected from the sea by a belt of sand dunes, among which are found a few fertile oases. Of these, Suara, near the Tunisian frontier, presents a flourishing appearance, with palm trees giving shelter from sun and wind for its orchards and fields of barley. Eastwards, along the coast, are the oases of Sawia, Mayat, Sayat, Sensur; next comes Tripoli with its terraces and minarets gleaming white against the vast background of its palm groves. Continuing eastwards, we pass the oases of Zilitten, Misrata, Tawerga, and, finally, Muktar in the Great Syrtes (Gulf of Sydra).

(1) "La Tripolitaine et l'Incident Franco-Turc," by M. Marchand. *Revue Francaise*, 1910.

"Speaking generally, the country which lies between the belt of sand dunes and the plateau is extremely arid. The nomad tribes raise scanty crops of barley from seed sown in the floors of the valleys, or in any spot which retains the least vestige of moisture from the winter season."

THE MOUNTAINOUS ZONE.—The so-called mountainous region of the Jebel Garian and Jebel Nefusa is in reality the wall of the great interior plateau which sinks abruptly to the Jefara, or low ground; its slopes are deeply fissured with ravines and strewn with débris. This district, together with the oasis of Tripoli, is the most fertile and the most thickly populated in Tripoli.

THE PLATEAU REGION.—The plateaux of Hammada el Homra, and of Barca, which occupy the bulk of the province, are thus described by M. Marchand in the above quoted article from the *Revue Française* (1910):—

"The structural framework of the province of Tripoli consists of a great rectangular plateau, marked by Nallut, Misrata, Sokna, and Radames (Gadames). After crossing this fringe of rough country one finds oneself on the plateau, the 'Hammada el Homra,' the most desolate portion of Tripoli. The surface of this immense 'Red Plateau' consists, for the most part, of gypseous clay with occasional rocky patches, and some long sandy depressions; the ground slopes gradually to the south over a width of 120 miles. . . . The only signs of vegetable growth are a few scattered tufts of esparto grass, or occasional stunted shrubs in the dry beds of torrents. . . .

"The plateau of Barca, the ancient Cyrenaica, presents a somewhat less desolate aspect. Owing to its peninsular situation, it is exposed to the Mediterranean breezes on three sides. Their beneficent influence is not, however, able entirely to compensate for the scorching blast of the Saharan winds.

"From the surface of the plateau there rises, as from a pedestal, the range of the Jebel Akhdar, (1) which at some points attains to heights of 3,300 feet. Screened by this mountain wall the seaward slope of the plateau is able to retain some part of the atmospheric moisture, which in winter dissolves itself in rain. The valleys and the middle portion of the slopes are thickly clothed with vegetation; shrubs of the temperate zone are here found mingled with those of forest growth; the lentisk and the arbutus grow side by side with the evergreen oak, the cedar, and the arbor vitae.

The southern slope of the plateau partakes of the characteristics of the Hammada el Homra in Tripoli. Nothing meets the eye but utter barrenness and desolation, white sand and stone, and the neutral-tinted flora of the desert. The Arabs have given this district the name of Barca el Beida."

INTERIOR.

The principal oases in the interior are Ghat and Ghadames, in the south-west; and Fezzan (chief town Murzuk) in the south on the great Hammada el Homra plateau. These oases are highly cultivated, and are of importance as halting places and junctions on the great caravan routes.

TOWNS.

TRIPOLI.—(30,000 popn.) is built on a rocky point close to the sea, and is surrounded by a high wall flanked with bastions, and protected by batteries; the town has four gates; at the south-east angle of the fortifications is the castle (a very ancient structure). The houses are generally

(1) The Green Mountain.

mean and the streets irregular and narrow. The country round is very low and flat; to south and east it is covered with palm trees and scattered villages. To west it is barren and sandy.

BENGHAZI.—(15,000 popn.) stands on the extremity of a low point, nearly surrounded by salt lakes and marshes. The town is poorly built of undressed stone; it contains a castle, the residence of the governor, a barracks for 500 troops, and a military hospital.

DERNA.—(4,000 popn.) is situated at the mouth of a large ravine. It contains a barracks for 750 troops. The houses are better built than those of Benghazi.

POPULATION.

The population, which is estimated at one and a half millions, consists of Europeans, Turks, Jews, Berbers, Arabs of pure and mixed descent, and, lastly, of negroes.

THE EUROPEAN population numbers some 8,000, chiefly Maltese and Italians. The Maltese are chiefly devoted to market gardening, and carry on a thriving trade at Khoms, Benghazi, and Tripoli. The Italians are less numerous than the Maltese, but take a more active share in the development of the country.

THE TURKS consist of the officers and officials, and of Kuluglis (descendants of Turkish fathers and native mothers) who form a bourgeois class in the suburbs of the towns.

THE JEWS are mostly settled at Tripoli (12,000) and Benghazi (2,000); they are confined to the "hara," or Jewish quarter of the town where they live in a constant state of insecurity.

THE BERBERS were the original inhabitants of the country even in the days of Carthage and the Phœnicians. They dwell in the highlands, where they devote themselves to agriculture, and shun all contact with civilization. Though fierce by nature and addicted to intertribal feuds, they acquiesce quietly in the Turkish rule, and give little trouble to the Government.

THE ARABS settled along the coast have lost much of their racial characteristics through contact with civilization, and are, as a class, peaceable and well disposed towards Europeans.

THE NOMAD ARABS wander freely over the vast spaces of the interior. They regard the Turks almost as infidels, and are practically out of touch with the administration. The Turks, on the other hand, interfere with them as little as possible. The result has been that the nomads have come more and more under the influence of the powerful Senussi confraternity. (1)

The Sect of the Senussi has acquired great power amounting almost to a hegemony of the whole interior of the country. This sect was established by Sidi Mohammed in the middle of the XIXth Century; its members, called "Khuans" or brothers, bind themselves to blind obedience to any order of the head of the sect. They are said to number three millions scattered through North Africa, Arabia, and Mesopotamia. They possess 30 "Zawai" or convent schools. Their headquarters are at Jarabub, which is said to contain numerous buildings and large stores of arms and ammunition. Another important centre of the Order is the oasis of Kufra.

The Senussi acquired so much power owing to the apathy of the Turks, and the mistrust with which the latter were regarded by the nomad tribes, that the Ottoman Government have thought it wise to compromise with

(1) Condensed from "La Tripolitaine et l'incident Franco-Turc," (*Revue Française*, 1910).

them, and leave them in practically undisturbed possession of their domain. Recent innovations, such as the conscription, have, however, caused friction which might soon have led to a conflict between the Government and the Confraternity.

Climate.

The climate is very variable; cold nights often succeed warm days; storms are of frequent occurrence; rain is at times wanting for months; the sirocco blows, at times, with great force in the autumn and the heat is, as a rule, much greater than at Tunis. (1)

Communications.(2)

The principal communications, in addition to the great caravan routes running from Tripoli through Fezzan and Ghadames, are (a) the road running parallel to, and 100 to 5,000 yards distant from, the shore through Suara, Muctar, Tripoli, Homs, Misrata, to Medina es Sultan. It presents no great difficulties, and could be rendered carriageable. A second road runs further inland from the Tunisian border, south of Jebel Tarhuna, through Nallut, Jeffren, Tarhuna to Homs. There are no railways, and no metalled roads in the interior.

No statistics are available as to the extent of the caravan trade with Central Africa, but it appears beyond doubt that much of this traffic has lately been diverted through Nigeria and Senegal to the Atlantic coast.

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From the above description of the province it will be seen that, in the absence of efficient coast defence forts, the ground in the neighbourhood of Tripoli itself is not favourable for opposing a landing. The rugged country a few miles inland, on the slopes of the Jebel Nefusa and Jebel Tarhuna would, it appears, offer great facilities for a defending force based on the oases in the south or south-west. How far the resources of the country are adequate to maintain a Turkish force in this situation, and whether further supplies could be drawn by the caravan routes from Central Africa are matters regarding which no data are available. The latter point would, apparently, depend to some extent on the attitude of the Senussi Confraternity (who are by no means well disposed towards the Turks), and partly also on the operations which the French are now carrying out in Wadai.

II. THE ITALIAN NAVY.

The Italian Navy of to-day dates from 1861, when the Kingdom of Naples and the two Sicilies was annexed by Sardinia, and Victor Emanuel became first King of a united Italy. After the disastrous defeat of her fleet under Persano by the Austrians under Tegethoff off Lissa, 20th July, 1866, successive Italian Governments devoted large sums towards building up a powerful navy, and in 1893 Italy could fairly claim to rank as a first-class naval power, coming next after France. Financial difficulties, which set in about that time, prevented her from maintaining the position she had won, but she still possesses a fair fleet, which is at least sufficiently strong to give her complete command of the sea in the present war.

(1) *Times Encyclopædia.*

(2) *Tripolitana, Rivista Militare Italiana, 1909.*

STRENGTH IN SHIPS.—At the present time she has available, 6 battleships with a mean displacement of about 13,000 tons, and a speed of 21 knots, which are well protected and heavily armed, and 2 smaller ones of some 10,000 tons and 19 knots speed, both well protected, but with a lighter armament; 7 armoured cruisers, of which 4 have a displacement of some 10,000 tons, with a speed of 22 knots, and 3 somewhat smaller ones of about 7,500 tons, and with 20 knots speed, which are all well armoured and well armed; 3 small protected cruisers, with 3 torpedo-cruisers, 10 destroyers, some 30 torpedo-boats and 6 submarines.

The Italian navy has never lacked able designers, who have more than once led the way in the matter of carrying a heavy armament, and giving a high speed in battleships and armoured cruisers on a comparatively speaking small displacement.

PERSONNEL.—The "personnel" of the fleet consists roughly of some 30,000 officers and men, of whom about 18,000 are serving afloat, and the remainder in the shore establishments. The men are drawn from the coast populations, most of whom are born to a seafaring life, and serve four years in the active fleet and six in the reserve; they are excellent fighting material, as their record from the earliest times prove.

NAVAL BASES.—There are three great Maritime Departments, each commanded by an Admiral, with headquarters at Spezia (1), Naples (2), and Venice (3), respectively.

Spezia is the most important of the naval bases, as its magnificent harbour can accommodate the largest fleets; it is very strongly fortified, and the dockyard is well-equipped.

Naples, with the large building yard on the opposite side of the Bay, at Castellamare, is not an ideal naval base, owing to the difficulty of adequately fortifying it, and it is probable that the headquarters of the Department will soon be transferred to Taranto, at the head of the Gulf of that name, where of recent years considerable sums have been spent in enlarging and improving the dockyard. Taranto has a wide, well sheltered roadstead, from which a canal, which will allow of the largest ships passing through, has been constructed to the dockyard; the roadstead is protected by the Islands of S. Pietro and S. Paolo, whose guns, mounted in armoured turrets, command the entrance, and a breakwater is being constructed, which will close the sea entrance of the Mar Grande, so that ships can lie in the outer roads secure from attacks from the sea. The works are to be completed in 1914. An extensive system of strong fortifications on the land side also exist.

Venice is provided with a large and well-equipped dockyard, where the largest ships can be built. The chief channels are now protected by modern forts, and there is a line of strong fortifications along the land front.

Of secondary naval bases, Italy possesses more than one, of these the Island of Maddalena, lying on the north coast of Sardinia, has a special value as a destroyer and submarine base, commanding as it does the entrance to the Straits of Bonifacio. It is strongly fortified.

Brindisi is having considerable sums spent upon it, to turn it into a refitting and repairing base, and the work is to be completed by 1st September, next year. The harbour also has been much improved, and a considerable number of ships can now lie there and refit in the worst

weather. It has also been strongly fortified, and will take the place of Messina. It is only 5 hours steaming from the Bocche di Cattaro on the opposite shore.

Ancona, on the 1st July this year, was declared a war harbour, and it is to be a base for medium-sized ships and small vessels.

Genoa, which is the chief commercial harbour in Italy, and where there is a large shipbuilding establishment, is also now protected with coast batteries as well as along its land front.

Augusta has been provisionally fortified, and used as a naval base since last month.

III. THE TURKISH NAVY.

Turkey, whose fleets at one time were the terror of the Mediterranean, and who, even during the war with Russia (1877-78) was able as against the Russian ships to dominate the Black Sea, is at the present time practically helpless from the naval point of view as against Italy.

She possesses at the present time only 2 battleships, the "Kheyr-ed-din Barbarossa" and the "Turgut Reis," vessels of some 10,000 tons displacement, armed with six 11-inch Krupp guns, and with a speed of about 16 knots. They were purchased from the German Government a year ago, their names then being "Weissenburg" and "Kurfürst Friedrich Wilhelm," but they are now 20 years old and practically obsolete. She has in addition two modern protected cruisers, the "Hamidieh" and "Medjidieh," both of about 4,000 tons and 22 knots speed, the one built at Elswick and the second by Cramp of Philadelphia; 2 torpedo-gunboats, 10 destroyers and some 15 torpedo-boats, all built during the last five years. There are also some 8 old battleships, which were modernised as far as possible a few years ago, but it is doubtful if they are of any real fighting value.

Of naval bases Turkey has none, and her only dockyard is in the Golden Horn. Since the Crimean War, England has more than once lent the Turkish Government officers of rank to train her navy, the first to be appointed being Sir Adolphus Slade, who was succeeded in 1864 by Hobart Pasha. Hobart brought the fleet up to a fair state of efficiency, and during the war with Russia it practically commanded the Black Sea. After the war was over and with Hobart's death, the fleet was completely neglected, but in 1898, the Turkish Government again applied to England for the services of an officer, and Rear-Admiral Sir D. Gamble was lent, who resigned the appointment in 1910, when he was succeeded by Rear-Admiral H. Williams. During the year he was in command, Admiral Gamble effected a good deal, and took a squadron of several ships, 'old as they were, for a four months' cruise. The Turks make excellent seamen, but their officers lack both experience and the necessary training.

IV. THE ITALIAN ARMY.

The strength and organization of the Italian Army at the end of last year can be seen by reference to the article on page 1333.

Owing to financial exigencies, the Budget for the current year provided for a peace strength of only 240,000, instead of the 272,629 laid down by the Army Bill of June, 1910. The result was a deficiency in the peace establishment of units of 16 men per company in the infantry, 28 men per squadron in the cavalry, and 20 men per battery in the artillery. This deficiency will now have been more than compensated for by the calling

out of the 1888 year-class of reserves. The strength of this year-class, when discharged from the colours, was 116,513, of whom 99,035 belonged to the first category, and would be available for an expedition overseas. Its strength may now be taken at 90,000 in round numbers.

The Italian infantry is armed with the rather old-fashioned 6.5-mm. Carcano magazine rifle, but quite recently 6,000 automatic rifles have been ordered from the Terni arms factory.

The artillery was, up till last year, without a Q.F. field gun. After various attempts had been made to convert the 75-mm. B.L. gun to Q.F. pattern, it was decided to purchase a new equipment. So far as is known the change has not yet been fully carried out.

The troops are in process of being equipped with grey-green "invisible uniforms."

COMMANDERS.—The Army Bill of 1910 created 4 "Army Inspections," with headquarters at Rome, Florence, Milan, and Naples. The Army Inspectors are the commanders designate of the groups of army corps in their Inspections, and are responsible for all arrangements in connection with their mobilization. The general officers holding these appointments are: The Duke of Aosta, San Martino, Cadarna, and Caneva. The latter, who has now been given command of the Expeditionary Force, is a cavalry officer, and has seen service in Abyssinia. During the manœuvres in Piedmont last month he commanded the victorious side.

V. THE TURKISH ARMY.

Old Organization.

The organization of the Turkish Army on modern lines was originally inspired by Von Moltke and a Prussian military mission who visited Turkey during the years 1835-42, and it has developed progressively under the influence of German advisers. The organization of 1842 was based on a division of the country into 6 military districts, and produced a total strength of 250,000 men. Partial reorganization in 1869 and 1874 raised the forces available to over 400,000, and during the war of 1877-78, some 700,000 troops were actually mobilized. In 1882, at the request of the Sultan, a German military mission of 11 officers, including the present Field Marshal Baron Colmar von der Goltz, was despatched to Constantinople. Four years later (1886) von der Goltz introduced the organization which held good until January of this year, and which, therefore, still governs the number of trained men available for war.

The system was, like its forerunners, based on compulsion, but many exemptions were allowed, and only Moslems were taken for regular service; so that out of some 170,000 youths who attained the military age in each year, not more than 70,000 were held to serve in the army.

The periods of service were: 3 years with the colours; six years in the reserve (cavalry and artillery 4 years colour service, 9 years reserve service); 9 years in the "Redif"; and 7 years with the "Mustafiz," or Territorial Army.

Under this organization the Turkish Army consisted of 7 Military Commands ("Ordus") of which three were situated in Europe and 4 in Asia, besides two independent divisions in Tripoli and Yemen. These Military Commands varied in strength, but their normal organization was in two divisions. A division was composed of two brigades (of 2 4-battalion regiments each) and a rifle battalion, making 17 battalions in all. The number of regular ("Nizam") divisions was 21, but there were, in addition, 24 divisions of 1st class "Redif" (Reserves) and 10

divisions of 2nd class "Redif," making a grand total of 55 divisions.

The regular (Nizam) cavalry were organized in 20 brigades of two 5-squadron regiments each. In addition, there were some unorganized irregular (Hamidieh) cavalry. The total strength of the army was estimated in 1910 to be as follows:—

	Peace.	War.
Infantry	150,000	975,000
Cavalry	21,000	25,000
Artillery		
Men	35,000	45,000
Field Guns	1,320	1,600
Machine Guns	110	572
Other Arms	25,000	30,000
Other trained men available ...		100,000
Total personnel available ...	231,000	1,175,000

New Organization.

Under the new organization (December, 1910) the regular army consists of 14 army corps, grouped in four army inspections, and of 6 independent divisions of which 3 are under the IInd Army Inspection, though not forming part of any army corps, while 3 (Tripoli, Assy, and Hejaz) are entirely independent. The total number of regular divisions is 43.

The normal composition of an army corps is as follows:—

3 divisions (1) of infantry; 1 regiment of rifles; 1 brigade of cavalry; 1 battalion of heavy howitzers (4 companies); 1 or 2 battalions of mountain artillery; 1 battalion of engineers; 1 telegraph company; 1 train battalion.

The normal division consists in peace time of:—

3 infantry regiments (of 3 battalions each); 1 rifle battalion; 1 mounted infantry company; 1 field artillery regiment (6 or 9 batteries).

One of the three battalions of each regiment is only a "cadre" unit, so that the number of active battalions in a division is 7 in peace time, and 10 in war.

The principle underlying this organization is that of groups of three. The normal army corps having 3 divisions, the division 3 regiments, and the regiments 3 battalions.

An important innovation is the abolition of the infantry brigade formation, thus leaving no link between the divisional and the regimental commander. It is claimed that this arrangement will be handier for marching and bivouacking in mountainous country (such as is usually the scene of Turkish military operations) than the more usual formation in 2 brigades. On the other hand, it has been urged that the difficulty of control for the divisional commander in an attack on a position will be greatly increased. It must be remembered, however, that the new organization is the work of Field-Marshal Von der Goltz, who is intimately acquainted with the characteristics and capabilities of the Turkish troops.

The cavalry is organized as before in brigades, of which one is allotted to each army corps.

The field artillery is organized in regiments which consist of 2 brigades of three 4-gun batteries each.

In addition to the army corps and divisions certain troops are directly under the army inspections. These include railway and fortress troops, educational establishments, etc. Many of these units are still incomplete.

(1) Army Corps X, XI, XII, XIII, have only 2 divisions each.

Summary of Regular Units on the Peace Strength *

Army Inspections, 4. Army Corps, 14. Divisions, 43. Infantry battalions, 387 (Machine gun companies, 129). Rifle battalions, 70 (Machine gun companies, 9). Mounted infantry and camel troops: battalions, 64. Cavalry regiments, 394. Field artillery batteries, 243. Horse artillery batteries, 15. Mountain batteries, 83. Heavy artillery companies, 28. Pioneer battalions, 144. Bridging companies, 13. Telegraph companies, 154. Railway battalions, 4. Medical companies, 14. Train battalions, 164. Frontier companies, 51.

The first-class "Redif" or reserve troops are organized in 39 divisions; the second-class "Redif" form 19 divisions, making 58 "Redif" divisions in all. These divisions are grouped under 5 "Redif Inspections," as follows:—

- 1st "Redif" Inspection, Constantinople: 11 1st class divisions, 6 2nd class divisions.
- 2nd "Redif" Inspection, Salonika: 10 1st class divisions, 13 2nd class divisions.
- 3rd "Redif" Inspection, Erzingyan: 7 1st class divisions.
- 4th "Redif" Inspection, Baghdad: 4 1st class divisions.
- 5th "Redif" Inspection, Damascus: 7 1st class divisions.

Military Qualities.

The army is trained on the principles of the German training manuals, and with the assistance of German officers of whom there were 9 in the Turkish service at the end of last year. Of the officers sent abroad for attachment to foreign armies in 1910, 19 were sent to Germany for 2 to 3 years, 49 to Austria for musketry courses only, and 6 to France.

The Turks are, in the opinion of Field Marshal Von der Goltz, a race of born soldiers. They are physically well developed, hardened to exposure, good though slow marchers, fearless, and possessing an instinct of duty and subordination to authority which is engrained in them by their religion. As regards smartness and parade discipline, they are much behind the armies of the great Powers, but even in these matters there has been a marked improvement in the last two years. Their character is specially suited for defensive warfare, but there is said to be no reason to doubt the capacity of the troops to carry out attacks, given good leadership on the part of the officers. As regards the latter, their military education had been almost entirely neglected under the old régime, but they are now devoting themselves strenuously to the acquirement of the technical and scientific knowledge necessary to place them on an equality with the officers of the great Continental armies.

The Turkish Garrison of Tripoli.

According to the Organization of March, 1911, the Turkish troops in Tripoli in September, should have consisted of the 42nd (Independent) Division ⁽¹⁾ organized as follows:—

- Infantry Regiment No. 124 (3 battalions) Benghazi.
- Infantry Regiment No. 125 (3 battalions) Tripoli.
- Infantry Regiment No. 126 (3 battalions) Interior.
- Infantry Regiment No. 127 (3 battalions) Tripoli
- 38th Cavalry Regiment, Tripoli.

* From Von Löbell's *Jahresberichte*, 1910.

(1) One battalion (the 42nd Nishanji Battalion) is away in Yemen.

Field Artillery Regiment No. 42 (2 battalions) ⁽¹⁾ Tripoli and Benghazi.

The above units should have totalled some 10,000 rifles.

There were, in addition, some 1,500 well-trained gendarmerie who had been reorganized by a British officer.

Some efforts had been made a few years ago to organize a militia force, but the attempt was abandoned. The Arab population have nearly all got firearms of one sort or another.

VI. THE HISTORY OF THE DISPUTE.

The immediate interest of Italy in Tripoli is believed to date from the signing of a "Protocole de désintéressement" between France and Italy in 1901. By this agreement Italy consented to leave France a free hand west of Algeria and was, in return, accorded similar freedom east of Tunis. The attitude of the Italian public opinion towards the question is well described in the following extract from the article in the *Revue Française*, which has already been quoted in Part I. of these notes.⁽²⁾

"It may appear strange, at first sight, that a country, so unpromising from an economic point of view, should have exercised such an attraction on Italy; but it must be remembered that the claims of Italy were first announced immediately after the French occupation of Tunis, at a time when there was a great lack of information about Tripoli and its hinterland. Legends were current as to the vast wealth of Central Africa, and it seemed probable that the trade of the Sahara—for which Tripoli is the only outlet—was capable of being immensely developed.

"Again, Italy had arrived late in the arena of colonial expansion, and—to quote the words of one diplomatist—"was prowling round the world to find some spot where she might plant her flag." Desiring to seek compensation for the disillusionment caused by the proclamation of the French protectorate in Tunis, she cast her eyes upon Tripoli, which lay so close to the shores of Sicily. Modern Rome wished to have a footing on the African littoral. It was hoped that it would prove possible to deflect thither the stream of emigration which at present flows towards South America, bearing away annually a large part of the surplus Italian population. However, Tripoli was not obtainable. Turkey stood by her rights, in spite of Italy's longings, and it was evident that unless the latter was prepared to evict the owners by force, she would have to content herself with the hope of a possible reversion of the estate.

"There is not a geographical society in the peninsula which does not devote several essays each year to the possible future of Italian colonization in Tripoli. Reviews such as the "Rassegna Nazionale," "l'Italia" *al Estero*," publish numerous articles on the subject. To the old policy which was content to contemplate its ideals platonically, at a distance ("la politica del non fare et del non volere che altri"), there has succeeded a desire for realization, but realization of a practical sort, which excludes any policy of mere adventure. It is by a process of pacific penetration, by the work of her sons, by their active participation in the development of the Vilayet that Italy hopes to establish her influence, and, finally, to create for herself a "special position." She hopes that the Young Turks, realizing the absolute necessity for calling in foreign capital

(1) Each field artillery battalion has 3 batteries. There are also some mountain guns. All the ordnance is of obsolete pattern.

(2) "La Tripolitaine et l'incident Franco-Turc," by M. Marchand. *Revue Française*, 1910.

will finally throw open the windows, which they have so long kept jealously closed, and will admit the daylight from without.

"The officials of the old régime, who were, as a rule, inclined to regard the good offices of Italy as a dangerous gift, adopted a policy of placid obstruction to the enterprises of Italians. Will modern Turkey persist in these tactics? She has every reason for seeking to improve this barren property, which at present imposes a financial burden upon her. The Turks ought really to be delighted that there are people in Europe who, in spite of the almost insurmountable difficulties of the enterprise, are willing to undertake to resuscitate a country which has been in a condition of stagnation from the time of its origin.

"Nevertheless, such as it is, Tripoli appears to the Italians a suitable field for their activity. One cannot, therefore, hope too earnestly that the Turkish Government will abandon its attitude of mistrust, and its rather puerile suspicions, and decide to encourage good offers, no matter whence they emanate."

Italian and Turkish Standpoints.

The causes which led to the crisis in September are as yet insufficiently known. The points of view of the two Governments, as recently summed up in the Italian ultimatum and the Turkish reply thereto, were as follows:—

ITALY.

Throughout a long series of years the Italian Government has never ceased to represent to the Porte the absolute necessity that the state of disorder and neglect in which Tripoli and Cyrenaica are left by Turkey should come to an end, and that these regions should be allowed to enjoy the same progress as that attained by other parts of Northern Africa. This transformation, which is required by the general exigencies of civilization, constitutes, as far as Italy is concerned, a vital interest of the very first order, by reason of the small distance separating these countries from the coasts of Italy.

Notwithstanding that the . . . Italian Government has always loyally accorded its support to the Imperial Government on the different political questions of recent times. . . . , not only have its views in regard to Tripoli been misunderstood by the Imperial Government, but, what is more, all enterprises on the part of Italians, in the aforesaid regions, constantly encounter a systematic opposition of the most obstinate and unwarranted kind.

TURKEY.

The Royal (Italian) Embassy is aware of the manifold difficulties of circumstances which have not allowed Tripoli and Cyrenaica to take advantage of the benefits of progress. An impartial consideration of affairs is enough to show that the Ottoman Constitutional Government cannot be held liable for a situation which is the work of the old régime. That being laid down, the Sublime Porte recapitulates the course of the three last years' searches in vain for circumstances in which it has shown itself hostile to Italian enterprises concerning Tripoli and Cyrenaica. Quite the contrary. It has always appeared to it normal and rational that Italy should co-operate with her capital and industrial activity in the economic uplifting of this part of the Empire.

The Imperial Government is conscious of having shown a conciliatory disposition each time that it has been confronted by proposals conceived in this order of ideas.

The September Crisis.

Early in September it was reported that negotiations which had been commenced with Turkey on the subject of Tripoli were not proceeding satisfactorily. Articles appeared in the press urging prompt action in defence of Italian interests and by the 20th September it was being openly asserted that preparations for a military occupation of the Vilayet were going forward. The Turkish press protested vehemently and threatened a boycott of Italian commerce and the expulsion of all Italian subjects.

On the 23rd September the Italian reserves of the 1888 contingent were called back to the colours. On the same day a Turkish transport, the "Derna" reached Tripoli, having been followed by Italian cruisers. War was now generally considered inevitable and the publication of military news was forbidden in both countries. The Arabs in Tripoli were said to be much agitated and Europeans began to leave by every steamer. On the 25th September Italy protested against the continuance of this state of unrest, and the Ottoman Government, in reply, formally denied that there was danger for Europeans. On the 28th September the Italian ultimatum was presented at Constantinople. It recapitulated the grievances of Italy, declined to prolong useless negotiations, and demanded an assurance within 24 hours that the Turks would not oppose the military occupation of Tripoli which had now been resolved on by the Italian Government. In its reply, which was handed to the Italian chargé d'affaires at 6 a.m. on the 29th, the Turkish Government offered to give guarantees for the economic expansion of Italy in Tripoli provided that the territorial integrity of Turkey was not affected. This reply not being considered satisfactory by the Italian Government, it was announced on the afternoon of the 29th that a state of war existed between Italy and Turkey from 2 p.m. on the same day.

VII. THE COMMENCEMENT OF HOSTILITIES.

Naval Events.

Owing to the strictness of the censorship news of the operations has been fragmentary, and often misleading. The following is an outline of the chief events during the first week in October:—

TURKEY.

When war was declared the Turkish fleet had been recalled from Beirout, and was on its way to the Dardanelles, which it is reported to have reached on the 1st October. It is not clear that any attempt was made by the Italians to intercept it. Some torpedo craft had been assembled at Preveza, in the Gulf of Arta; and some old gun-boats of no fighting value were in the Red Sea.

ITALY.

The main portion of the Italian fleet under Admiral Aubry was in the Mediterranean, between Augusta and the coast of Tripoli. In the Adriatic was a small division consisting chiefly of torpedo craft, under the Duke of the Abruzzi.

In the Red Sea there was the torpedo-cruiser "Aretusa," with the "Vulcano," and the "Staffetta."

ADRIATIC.—The Duke of the Abruzzi commenced operations on September 29th by hunting down some Turkish torpedo craft near Preveza and bombarding the fort at that place. Reports that the Italians had

landed on the coast of Epirus were formally contradicted. These "sweeping" operations continued until October 6th, when peremptory orders were issued, apparently out of deference to Austrian opinion, recalling all vessels cruising on the Albanian coast.

The Turkish losses during these operations appear to have been 6 torpedo craft, including the "Tokat," "Alpagot" and "Hamidabad," a steam transport with 5 officers and 162 men, besides some smaller vessels carrying arms, etc. In consequence of these captures a naval prize court was constituted.

MEDITERRANEAN.—On the 29th September Tripoli harbour was blockaded. On October 1st the Turks declined an invitation to surrender and sank their own ships the "Derna" and a gun-boat. On the same day the cable was cut by the Italians, but bombardment was postponed to allow of the departure of Europeans. About the 2nd October, the greater part of the Turkish troops withdrew to the hills some 10 miles inland. On October 3rd at 3.30 p.m. the "Benedetto Brin," "Varese," "Garibaldi," and "Ferruccio," bombarded the Turkish forts Pink, Sidi Shahab, and Trado; great care was taken to avoid damage to the town. The forts replied but were easily silenced; on the morning of the 4th Fort Sidi Shahab reopened fire and was again silenced. White flags were now raised on the Castle; a landing party from the fleet occupied the defences and hoisted the Italian flag on the Pacha's Castle. The Turkish losses were given as 12 killed and 23 wounded. 27 guns were found in the town, including some new ones disembarked from the "Derna."

During the firing some looting by Arabs took place on the outskirts of the town, but Europeans were not molested, and on the landing of the Italians order was quickly restored. Admiral Borea d'Ulmo was appointed Governor, with 2,000 men of the Naval brigade as a temporary garrison.

Between the 4th and 7th October, Benghazi, and Marsa Tobruk had also been occupied by Italian naval detachments.

Military Events.

ITALY.

THE EXPEDITIONARY FORCE.—As already mentioned, the reservists of the 1888 contingent were called up on the 23rd September, thus increasing the army by some 90,000 men.

Since then the 1890 contingent (1st category, 15,000 to 25,000, and second category 25,000 to 30,000) has been recalled throughout the army, and in addition, the 1st category of the 1889 class have been called up to the Xth corps at Naples, and to the XIIth corps at Palermo.

The mobilization of the expeditionary force is said to have been completed on the 1st October.

It is reported to consist of a composite army corps organized as follows:—

Commander-in-Chief: Lieutenant-General Caneva.

Chief of the Staff: Major-General Annibali Gualtadello.

1st Division: Commander, Lieutenant-General Pecori-Giraldi, Commander of the 24th Division.

1st Brigade, Major-General Rainaldi: Infantry Regiments, 82nd (Rome); 84th (Florence).

2nd Brigade, Major-General Giardina: Infantry Regiments, 6th (Palermo); 40th (Naples).

3 Squadrons cavalry (Lodi Regiment).

6 batteries field artillery formed from 4 different regiments.

11nd Division: Commander, Lieutenant-General Ottavio Briccola, Commander of the 16th Division.

3rd Brigade, Major-General d'Amico: Infantry Regiments, 22nd (Pisa); 68th (Milan).

4th Brigade, Major-General Ameglio: Infantry Regiments, 4th (Catania); 63rd (Salerno).

3 Squadrons Cavalry (Piacenza Regiment).

6 batteries of field artillery.

Army Troops:

8th Bersaglieri (Palermo).

11th Bersaglieri (Naples).

Salazza battalion of 2nd Alpine Regiment.

1 battalion sappers.

besides coast artillery, mountain artillery ⁽¹⁾ and departmental troops, make some 35,000 to 40,000 troops in all.

Transport and supply are in excess of normal war establishments; companies of infantry have a strength of 150 rank and file. Units have been completed by drafts from other regiments, including a proper proportion of officers and N.C.O's. No men of the 1888 contingent are included in the Expeditionary Force.

It is stated that 60 steamers have been chartered as transports, and that the first convoy of 23,000 troops should land in Africa on the 12th—14th inst.

It is reported that 2 dirigibles, and 8 aeroplanes will accompany the expedition.

TURKEY.

After the outbreak of war, the Yanina and Kozan divisions, besides 3 "redif" divisions were mobilized in Epirus. The Salonika division was also mobilized and "redifs" summoned.

LANDING IN SAMOS.—On 6th October it was reported from Athens that 500 Turkish troops had landed in Samos, in violation of the agreement of 1832.



NEUTRAL POWERS.—The neutral Powers are said to have approached both belligerents with a view to limiting operations to European waters.

The Italian operations in the Adriatic and the reports of landings on the Albanian coast, appear to have caused some uneasiness in Austria. This was, however, allayed by the assurances from the Italian Government that the reports were unfounded, and that they had not the remotest intention of landing troops elsewhere than in Tripoli and Cyrenaica; and further, that their operations in European waters were directed solely to protecting Italian coasts, open towns, troop transports, and merchant ships in the Adriatic and Ionian Seas.

Considerable anxiety was caused in Russia and other States at a report that the Turkish Government would declare corn contraband of war, irrespective of destination. On the 10th October it was announced that vessels laden with grain might pass the straits, provided they were not bound for an Italian port.

(1) One division has a "group" of 3 batteries of mountain artillery.

Explanation of Symbols.

Turkish Army Corps. **1** Corps

Italian Army Corps. **8** Corps

do. Cavalry Div. **2** Div

do. Naval bases. **■**

Railways. **—**

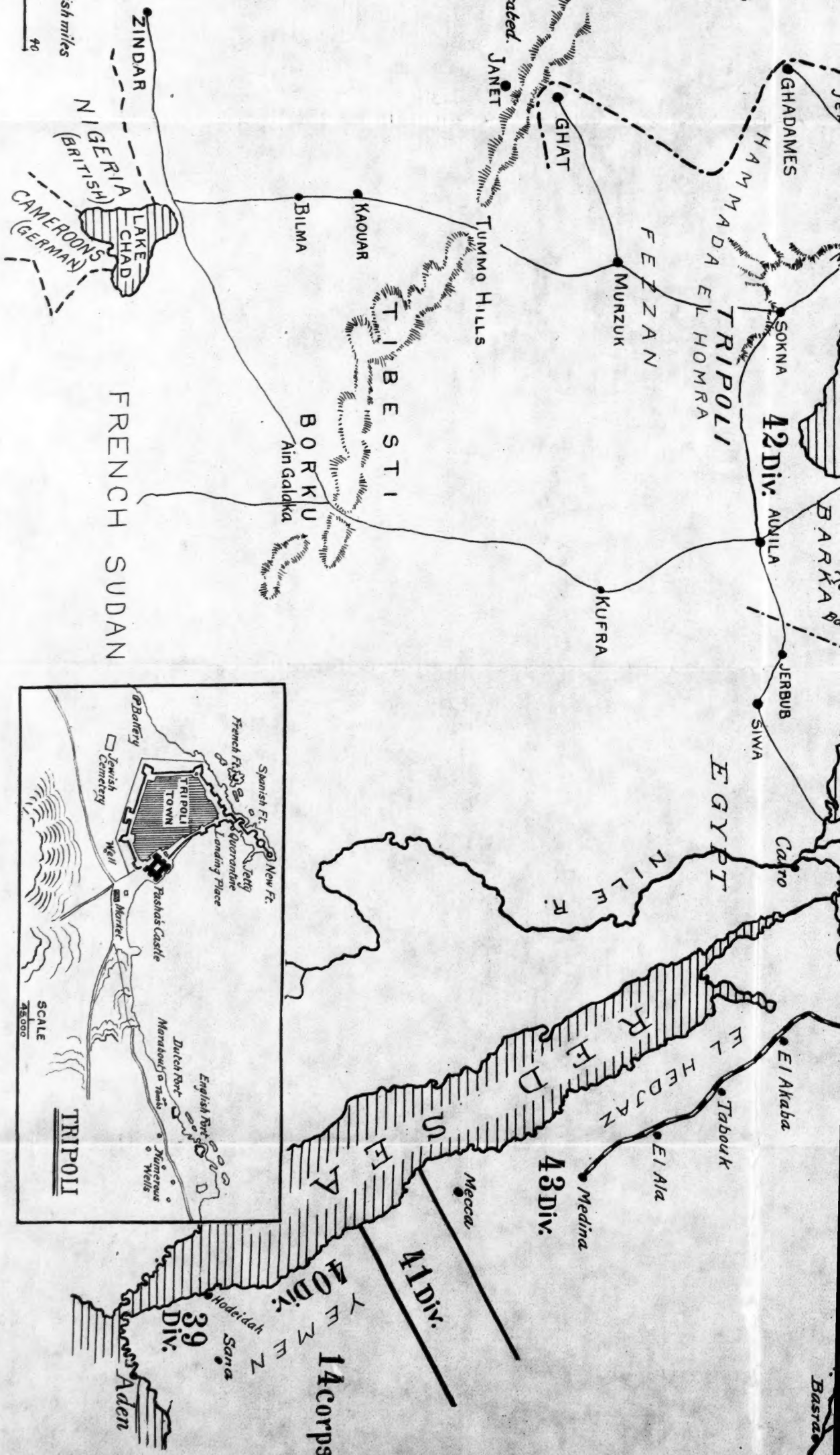
Railways in Europe are not indicated.

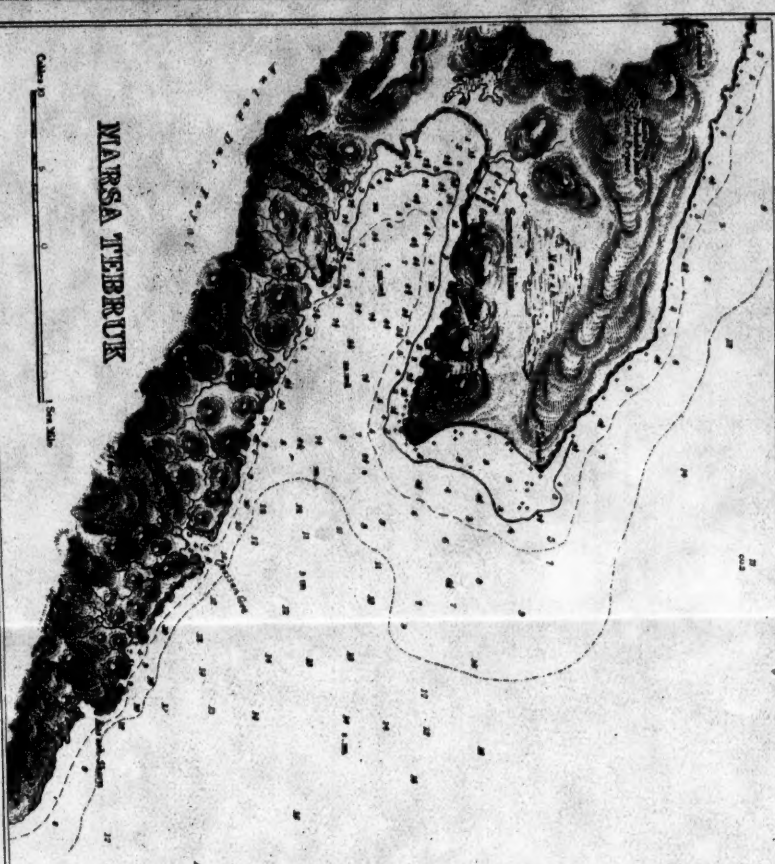
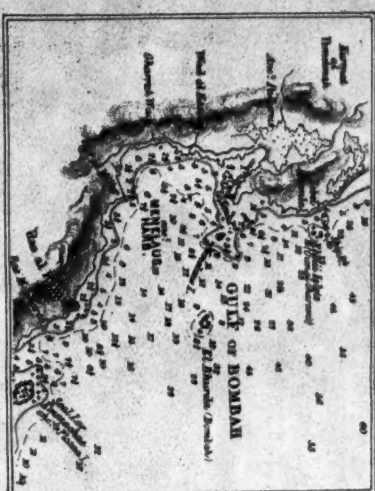
Caravan routes. **---**

Cable. **----**

Note.—The Turkish Army Corps areas are from a map in General Imhof's article in *Militär Wochenblatt* of 4th April.
The transverse lines between the Italian Army corps do not indicate army corps areas.

Scale in English miles
0 100 200 300 400





Explanation of Symbols



NAVAL NOTES.

BRITISH EMPIRE.

THE KING.

His Majesty has been graciously pleased to direct that the Commonwealth Navy shall in future be styled the "Royal Australian Navy."

HOME.—The following are the principal appointments which have been made :—

Rear-Admirals.—Sir Colin Keppel, K.C.V.O., C.B., D.S.O., to command a detached squadron on the occasion of His Majesty's voyage to India; Herbert G. King-Hall, C.V.O., C.B., D.S.O., to be Rear-Admiral in the Second Division of the Home Fleet. **Captains.**—Alexander L. Duff, Commodore, Second Class, to be Director of Naval Mobilization; J. B. Eustace to "Victory," and as Commodore, Second Class, in command of R.N. Barracks; H. A. Adam to "Dido"; A. D. Ricardo to "Vanguard"; J. F. E. Green to "Essex"; W. C. Nicholson to "Vernon"; C. C. Fowler to "Roxburgh"; T. D. Sheppard to "Queen"; E. F. Gaunt, C.M.G., to "Superb"; A. E. M. Chatfield to "Medina," and as Flag-Captain to Rear-Admiral Sir C. Keppel; W. J. Alderson to "Yarmouth." **Commanders.**—J. E. de V. Coke to "Latona"; G. N. Ballard to "Philomel."

Sir W. Graham Greene, K.C.B., has been appointed Permanent Secretary to the Admiralty in succession to Sir C. Inigo Thomas, G.C.B., who retires.

The new P. and O. steamer "Medina," which is to convey their Majesties to India, was commissioned on the 10th inst., and the flag of Rear-Admiral Sir Colin Keppel, K.C.V.O., C.B., D.S.O., was hoisted on board her the same day, in command of the Royal escorting squadron, which is to consist of the first-class armoured cruisers "Defence," "Argyll," "Cochrane," and "Natal."

The second-class cruiser "Falmouth" was commissioned at Chatham on the 5th ult., for service in the Second Division of the Home Fleet, as one of the attached cruisers of the Battle Squadron; she takes the place of the "Glasgow," which was detached in May last for special service on the South-east coast of America and West coast of Africa.

FOREIGN POWERS.

CHILI.

Naval Expansion.

An editorial in the (Chilian) "Revista de Marina" for April, 1911, greets with satisfaction the decision of the Government to place the Navy on an efficient footing, and to construct defences at some of the most important points on the Chilian coast, notably at Arica. The provinces of Tacna and Arica were brought under Chilian rule as a result of the campaign of 1879 and the treaty of Ancona, but so far little has been done for their protection. The Naval War Commission, which was appointed to study the defence of the harbour of Arica has now published its report, and the works necessary to convert this port into an efficient naval base will shortly be taken in hand.

Chill—continued.

As regards naval construction, an order has already been placed with Messrs. White & Co. of London for six destroyers, at a cost of £987,530; the next step will be to increase the number of Dreadnoughts and submersibles. It is hoped, later, to proceed with the construction of a large dock at Talcahuana.

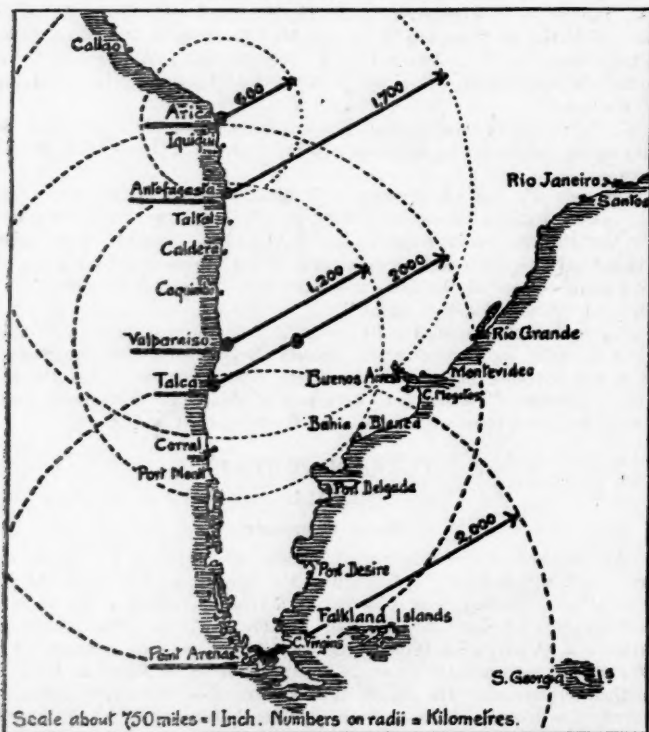
The schemes for coast defence and naval construction are to be considered complementary to one another. They tend in the words of the article: "to form the base of future naval power, developing methodically in accordance with a well-considered programme, founded on our requirements, on our relations with neighbouring states, and the future development of our commerce and national industries."

Wireless Telegraph Stations.

The Government has further decided upon the installation of wireless stations along the Chilean coast from Punta Arenas to Arica, a distance of, approximately, 2,160 nautical miles.

PROPOSED CHILIAN WIRELESS TELEGRAPH STATIONS.

Redrawn and reduced from map in the original.



A small sum was allotted for this purpose in the estimates of 1910. It has been necessary to adopt ultra-powerful plant in order to establish

Chili—continued.

communication along this extensive coast line; in addition small auxiliary instruments are to be used for the service of intermediate ports.

A medium installation of the "Telefunken" system has already been received at the Arsenal, and should, by now, be in use in one of the forts of Valparaiso.

In the estimate for the present year another small sum is allotted for continuing the wireless stations along the coast, and for the wireless equipment for the ships of the Chilian Navy.

The following is an outline of the programme approved by the Naval Authorities:—

(1) Two ultra-powerful installations of long range, one for Punta Arenas, the other for Talcahuana. The Punta Arenas installation is to hold communication (guaranteed by day) with Talcahuana to the north, and for an equal distance to the south. The Talcahuana station will communicate, under similar conditions, with the ports of Punta Arenas to the south, and with Autofagasta to the north.

(2) A powerful installation for Autofagasta, with range (guaranteed by day) as far as Talcahuana to the south, and for an equal distance to the north.

(3) A small installation for Arica, with range (by day) as far as Autofagasta.

(4) The "Telefunken" installation at Valparaiso.

(5) The only wireless installation on land, namely that at Fort Talcahuana, in Valparaiso, will be removed to another port of importance, such as Caldera, in order that it may serve as an auxiliary.

There remain for further consideration a number of auxiliary stations, for Puerte Moult, etc., besides small ones for lighthouses and islands, like Juan Fernandez, etc.

The above is the general outline of the programme. The intention of the Government is to leave the organization, development, and technical establishment of their works in the hands of the naval authorities, and to deliver them over, when organized, to the General Direction of Telegraphs, for public and private use.

Précis from the "Revista de Marina," March and April, 1911.

NEW DREADNOUGHT.—A decree was signed on August 6th accepting Messrs. Armstrong's tender for a Dreadnought of 28,000 tons, with 14-in. guns, at a cost of £2,338,190.

The contract for the construction of six destroyers has been given to Messrs. Samuel White, of Cowes. The vessels will cost about £1,000,000.

FRANCE.

The following are the principal appointments which have been made:—
Capitaines de Vaisseau.—H. V. Barbin to "Gloire"; J. E. Guillon to "Furieux"; P. A. F. Kériheul to "Bretagne"; A. F. Banon to "Amiral-Aube."
Journal Officiel de la République Française.

BLOWING UP OF THE "LIBERTÉ."—The French first-class battle-ship "Liberté," one of the ships of the Second Battle-ship Squadron, blew up about 6 a.m. on the 25th ult. in Toulon Harbour, and is a total wreck.

France—continued.

At 5.35 in the morning an explosion was heard on board the ship, which caused a column of smoke to rise in the forepart of the ship; the alarm was immediately given and assistance sent from the other ships of the squadron, but a little later another terrific explosion occurred, which was heard 30 miles away, and as soon as the smoke cleared away it was seen that all that remained of the ill-fated ship was a shapeless and half-sunken mass of wreckage. *Débris* of all kinds was hurled sky high and fell in all directions, dealing death and destruction wherever it fell. The sea was covered with such fragments of the wreck as could float, and the concussion of the explosion was felt on board every ship, set houses in the town rocking, and broke windows throughout the town far across the harbour, while many of the boats which were standing by the ship were swamped or drawn under and their occupants drowned.

The "République" was struck by a mass of armour weighing close upon a ton torn from the "Liberté," which was projected with immense force against her side about 50 feet from the stern, the plates being stove in and ripped off for a distance of 20 or 30 feet, and about half-way down to the water-line, while part of the "Liberté's" fore bridge, with two huge projectiles and a shower of smaller *débris* were also hurled upon her, resulting in the killing and wounding of over thirty men and an officer. A third battle-ship, the "Démocratie," also suffered damage, but of a less serious nature than that inflicted on the "République," while nearly every ship of the fleet showed signs of having been more or less "under fire." The captain of one of the training-ships was killed by a fragment of a shell as he stood watching the "Liberté" from the bridge of his ship. The casualties are now reported to be 204 officers and men, dead or missing, while the wounded number 136, with 48 others described as suffering from slight injuries, of these 143 killed or missing, including 5 officers, and 91 wounded, including 4 officers, belonged to the "Liberté."

The cause of the disaster is unknown, but it is believed to have been due to the decomposition of what is known as the B powder, which caused the blowing up of the battleship "Jena," some four years ago.

Précis from *Times*.

SCHOOL OF APPLICATION FOR MIDSHIPMEN.—*École d'application des Aspirants*. The "Duguay-Trouin," Cruising Training-ship, is to be replaced by the armoured cruiser "Jeanne d'Arc," which will be the sixth vessel that has served in this capacity since the foundation of the School in 1866. The object of the *École d'Application* is to provide *Aspirants* on leaving the *École Navale* with the opportunity of perfecting themselves in and practising at sea the instruction they have received on board the "Borda." Before the creation of the *École d'application*, *Aspirants* on leaving the "Borda" were sent to the different sea-going ships where they did regular naval officers' duty; it was thought, however, that better results would be obtained by making them continue their instruction together, and so the *École d'application* was created.

It was first instituted on board the "Jean Bart," a steam two-decker, the main deck guns being removed to give the necessary accommodation; after the "Jean Bart" came the "Renommée," a steam frigate, then the "Flore," a frigate of the same type, and next the "Iphigénie," the first captain of the restored school having been Capitaine de Vaisseau Besnard, who later twice held the post of Minister of Marine.

France—continued.

The "Iphigénie" made 16 cruises, the cruises extending over periods of six months, and introduced 16 batches of *Aspirants* into the navy; it then became necessary to replace her, and the "Foudre" was proposed for the purpose. This latter ship was designed at first to carry a considerable number of small torpedo-boats; she was next transformed into a floating factory, and was then used to convey submarines to Saigon, and she is now about to be appropriated for the Naval Aviation School. The "Foudre," not having been found suitable, the Aviso-transport "Tonkin" was prepared to succeed the "Iphigénie," her name being changed to the more suitable one of "Duguay-Trouin," and it is this vessel which after 10 years' service is now about to be replaced by the "Jeanne d'Arc." Launched in 1889, the "Jeanne d'Arc" has a displacement of 11,270 tons, and a speed of 22 knots, and was in her early days the fastest cruiser afloat. She is to retain her full armament of two 19-cm. (7.4-inch) and fourteen 14-cm. (5.5-inch) Q.F. guns, and the *Aspirants* drafted to her will find the most ample means of perfecting themselves in the most up-to-date duties of the naval officer.

* * *

NEW BATTLESHIPS.—The two new French "Dreadnoughts" of this year's programme are to be named "La France" and "Le Paris." According to the statement made in the Chamber of Deputies by Vice-Admiral Boué de Lapeyrère, then Minister of Marine, the ships are to be similar in every detail to the "Jean Bart" and "Courbet," laid down last year. In the discussion with regard to these ships, which ensued in the Chamber, M. Jaurès proposed that the new ships should be armed with 34-cm. (13.3-inch) guns, instead of 30.5-cm. (12-inch) guns, for which they are designed. In reply, the Minister pointed out that, in the first place, it would entail an alteration in the plans and a delay in the completion of the ships of at least 12 months, as the order for the 34-cm. guns could not be given until after exhaustive experiments had been made with the trial weapons of that type now being manufactured at the Ruelle Ordnance works, which experiments could not be commenced before July. He further stated that the advantages claimed for the 34-cm. were doubtful advantages; it was true that at 9,000 metres it could perforate armour which the 30.5-cm. can only pierce at 6,500 metres, but at 9,000 metres the target is a very small object, it being only the water-line belt of 30-cm. (11.8-inches), one metre high, that the 30.5-cm. gun cannot pierce at that distance; and as regards all other armour at the greater range, the 30.5-cm. gun is equally effective as the 34-cm. one. It had also to be remembered that an increase in the calibre and size of the gun meant a diminution in the rapidity of fire, and, further, that the new ships, as designed, could only carry ten 34-cm. guns as against the present armament of twelve 30.5-cm. guns; if, however, it was considered advisable, the next group of battleships could be designed to carry the 34-cm. guns. The new ships are to be laid down in private yards, as the Government yards at Brest and Lorient could not undertake the work without a delay of eight months.

Objection being taken by M. Nail, the Deputy for Lorient, to work being taken from the Government yards and given to private firms, and that it would be better to increase the *personnel* and plant of the dock-yards, if necessary, a masterly speech was made in reply by M. Delcassé

France—continued.

(now Minister of Marine), who had been President of the Commission on the navy, in which he pointed out that as regarded the construction of the ships in question, were they to act differently in this matter from the other great Naval Powers? England gives two-thirds and Germany three-quarters of their new construction to private contractors, and he asked, would it be to the interest of the State to increase the personnel of the dockyards, already numbering 27,000 men, equal to the number that England and greater than the number Germany employs, or advisable at great expense to add new plant at the dockyards without the certainty of being able to use it profitably? And after all, the workmen in the private yards were equally French workmen. There certainly would also be a delay of eight months at least, as the Minister had explained, before they could be commenced, and with Germany laying down four more 22,000-ton ships, Italy laying down four and two others projected, Austria two already commenced and a third to be begun this year, with a fourth next year, Russia also with four 23,000-ton ships under construction, and several others projected, there was no time to be lost if the Chambers were to fulfil the obligations they owed to the country.

The Commission of Marine, under the presidency of M. Thomson, has met to consider the changes proposed by the Government as regards the dates of commencement of the new battleships, and to consider the Estimates.

On the 19th of June last a Sub-Committee, composed of MM. Thomson, Nail, Bénazet and Vice-Admiral Bienaimé urged on the Minister of Marine the necessity for hastening the dates of commencing the battleships of the new programme. The Minister now states that the Government propose to commence two battleships alternately in the arsenals and by private contract on the following dates:—1st May, 1912; 1st May, 1913; and the 1st January, 1914, 1915, 1916 and 1917, the whole of the vessels to be completed by the 1st January 1920. The construction of the new docks, at Sidi Abdalla (Bizerta) and Lorient, which are to be capable of taking in the largest battleships, will be commenced early in 1912.

The expenditure required for new constructions, ammunition and guns is apportioned as follows:—

1912	...	...	...	...	...	£6,880,000
1913	...	...	...	...	...	7,200,000
1914	...	...	...	...	...	8,080,000
1915	...	...	...	...	...	7,680,000
1916	...	...	...	...	...	7,400,000
1917	...	...	...	...	...	6,800,000
1918	...	...	...	...	...	5,760,000
1919	...	...	...	...	...	3,640,000

On financial and other grounds M. Delcassé desires the Committee will allow 25 years as the life of battleships built prior to 1906, and 20 years for those built subsequently to that date.

La Vie Maritime, Le Temps and Le Yacht.

GERMANY.

NEW SHIPS.—The new "Dreadnought" battleships "Thüringen" and "Ostfriesland" were commissioned at Wilhelmshaven on the 1st and 31st July respectively, and have taken the place of the "Wettin" and "Mecklenburg" in the I. Squadron of the "High Sea" Fleet, which two latter ships

Germany—continued.

have been transferred to the reserve. The "Helgoland," a sister-ship of the above, will relieve the "Hannover" in a few weeks, which will leave the "Schlesien," the only pre-"Dreadnought" battleship in the First Squadron, in due course she is to be relieved by the "Oldenburg," the fourth ship of the "Ostfriesland" class, which, however, will not, according to present arrangements, be completed before next summer. The "Hannover," on being relieved by the "Helgoland," is to join the II. Squadron as 8th ship, in place of the "Deutschland," the flagship of the Commander-in-Chief, which thus becomes an independent unit, the strength of the "High Sea" Fleet being raised from 16 battleships to 17.

There has been considerable doubt as to what the armament of the four ships of the "Ostfriesland" class was to be, and as to how the guns were to be mounted. This is of course now no longer a secret; in fact, the information was given in the number of that valuable publication *Nauticus* for 1911, which appeared in the early part of last June. The "Ostfriesland" and her sisters show a considerable advance upon their four predecessors of the "Nassau" class, as they carry twelve 12-inch 45-calibre guns instead of the 11-inch guns of the "Nassau." These guns, however, are mounted on the same system as in the "Nassau," viz: in six double turrets, one forward, one aft, and two on each beam, so that like our own earlier "Dreadnoughts," they can only bring eight guns to bear on each beam, out of their twelve, and for end on fire, whether ahead or astern, they can bring six to bear. The secondary armament consists of fourteen 5.9-inch Q.F. guns, being two more than in the "Nassau," and the light armament of fourteen 3.4-inch Q.F. guns, which is two less than in their predecessors, while there are six submerged torpedo-tubes, the calibre of which is not given. Their dimensions are as follows:—Length on water line, 546 feet 4 inches; beam, 93 feet 6 inches; draught, 27 feet, with a displacement of 22,800 tons, or some 4,000 tons more than the "Nassau" and her sisters. They are fitted with three reciprocating engines to develop 28,000 I.H.P., giving a speed of 20.5 knots, as against the 19 knots of the four earlier ships; steam being supplied by 15 small-tubed Schultz-Thornycroft water-tube boilers. The normal coal supply is 900 tons, and the total bunker capacity 3,000 tons.

The autumn is to see some changes also among the "scouting ships," the most important of which will be the substitution of the new "Dreadnought" cruiser "Moltke," for the "Blücher," the present flagship, which is to take the place of the "Prince Adalbert" as the Gunnery Experimental Ship. It was known that the "Moltke" was an improvement on the "Von der Tann," but no details were available; these are now given in *Nauticus*, and show that the "Moltke" is an extremely powerful cruiser-battleship. She has been constructed by Blohm and Voss, at Hamburg, the firm which built the "Von der Tann" and most of the earlier armoured cruisers constructed for the German Navy. Laid down in December, 1908, and launched in April of last year, the "Moltke" has entered on an exhaustive series of trials. Her dimensions are as follows:—Length, 613 feet 3 inches; beam, 96 feet 9 inches; draught, 27 feet, and a displacement of about 23,000 tons (she is thus some 4,000 tons

Germany—continued.

larger than the "Von der Tann" and our own "Indefatigable"). She is fitted with Parsons turbines, which are expected to develop 50,000 I.S.P., giving a speed of 25.5 knots; steam being provided by 24 Schultz-Thornycroft water-tube boilers. The normal coal supply is 1,000 tons, and the total bunker capacity 3,100 tons. The armament consists of ten 11-inch guns (two more than in the "Von der Tann") in five double turrets, one forward, one *en échelon* on each beam, and two aft, the second one from aft of which fires over the other, and she can thus bring the whole of her ten guns to bear on either broadside—being the first of the "Dreadnought" type of ship in the German Navy which is able to bring more than 8 guns to bear on the broadside; the secondary armament consists of 5.9-in. Q.F. guns (two more than in the "Von der Tann"), and the light armament of twelve 3.4-in. Q.F. guns, with 4 submerged torpedo tubes, of which the calibre is not given. Although the nominal contract speed of the "Moltke" is only 25.5 knots, yet it is hoped that her real speed will prove to be nearer 30, and in view of the remarkable results achieved by the "Von der Tann," it is quite possible that these hopes may be realised. It may be of interest to recall the results attained by the "Von der Tann," which is also provided, like the "Moltke," with Parsons turbines, intended to develop 41,000 I.S.P., and to give a speed of between 24 and 25 knots. On her full speed trial the engines developed a mean I.S.P. of no less than 79,802, giving a speed of 27.7 knots with 338.9 revolutions; in deep water on her normal draught and with her own engine room staff, a speed of 28 knots was maintained. During her recent three months' cruise to South America, there was not the slightest hitch with her machinery, and on the run home between Teneriffe and Helgoland she maintained with ease a speed of 24 knots. If the "Moltke" is equally successful, she may well reach a speed of 30 knots.

It should be noted that no official details as to the armour protection of any of the German ships of the "Dreadnought" type have been published or are available, and any published in English so-called Naval works of reference must be received with caution, and it may further be noted that in the *Taschenbuch der Kriegsflootten*, which has more or less access to official information, all particulars as to the armour of these ships is carefully omitted.

Other changes among the cruisers of the "High Sea" Fleet, to take place now the manœuvres have been concluded, will be the paying off of the armoured cruiser "Roon," which, with the withdrawal of the "Blücher," and until the "Moltke" joins, will leave the fleet with only two armoured cruisers (the "Von der Tann" and the "Yorck"), and the substitution for the two small cruisers "Berlin" and "Königsberg," of the "Cöln" and the "Kolberg," which have recently successfully completed their trials. These two cruisers are vessels of 4,350 tons (nearly 1,000 tons larger than the ships they will relieve), with a length of 401 feet 6 inches over all, a beam of 46 feet, and a draught of 16 feet 5 inches. They are fitted with turbine engines designed to develop 20,000 I.S.P., and give a speed of 25.5 knots, but on trial the S.P. and speed were both considerably exceeded; the "Kolberg's" engines, for instance, developed over 30,000 I.S.P., giving a

Germany—continued.

mean speed of 27 knots. Steam is provided by 15 Schultze-Thornycroft boilers, and the normal coal supply is 400 tons with a total bunker capacity of 900. Their armament consists of twelve 40-calibre 4.1-inch Q.F. guns, four 2-inch Q.F. and 4 machine guns, with two submerged tubes for 17.7-inch torpedoes. The conning tower is protected with 3.9-inch armour tapering to 3.1-inch, and there is an armoured deck of 2-inch steel tapering to .8-inch.

Marine Rundschau and Nauticus.

THE ESTIMATES FOR 1911.—The Estimates for 1911 amount to £22,053,626 as against £21,245,484, the amount approved by the Reichstag for last year, being an increase of £808,142. The following are the principal items

ORDINARY PERMANENT ESTIMATES.

	Proposed for 1911 £	Voted, 1910. £
Imperial Ministry of Marine and Naval Cabinet ...	111,700	109,591
Admiral Staff ...	16,991	16,006
Naval Observatories ...	20,450	19,749
Station Accounts Departments ...	42,532	41,524
Legal Department ...	10,544	10,767
Chaplain's Department and Garrison Schools ...	9,940	9,501
Pay of Officers and Men ...	1,910,010	1,780,927
Maintenance of fleet in commission ...	2,282,623	2,118,134
Victualling ...	141,380	147,110
Clothing ...	24,370	22,253
Garrison Administration and Works Department ...	110,470	107,124
Lodging Allowance, etc. ...	204,303	199,692
Medical Department ...	158,648	150,396
Travelling expenses, freight charges, etc. ...	196,808	174,781
Training Establishments ...	27,904	28,636
Maintenance of Fleet and Dockyards ...	1,797,346	1,784,988
Ordnance (guns, torpedoes, mines) and fortifications ...	922,886	789,284
Accountant Department ...	58,233	57,345
Pilotage, Coastguard and Surveying ...	42,684	39,977
Miscellaneous Expenses ...	87,948	85,450
Total, Ordinary Permanent Estimates ...	8,184,670	7,693,235
Administration of Kiau-Chau Protectorate ...	7,800	7,915
	£8,192,470	7,701,150

SPECIAL ORDINARY EXPENDITURE.**BUILDING PROGRAMME FOR 1911.**

For the construction and completion of the following ships:—

The first-class battleship "Ostfriesland" (Ersatz "Oldenburg"), 4th and final vote ...	£230,054
The first-class battleship "Helgoland" (Ersatz "Siegfried"), 4th and final vote ...	230,054
The first-class battleship "Thüringen" (Ersatz "Beowulf"), 4th and final vote ...	230,054
The first-class armoured cruiser "Moltke," 4th and final vote ...	252,080
The first-class battleship "Oldenburg" (Ersatz "Frithjof"), 3rd vote ...	293,686

Germany—continued.

The first-class battleship "Ersatz Hildebrand," 3rd vote ...	£293,686
The first-class battleship "Ersatz Heimdall," 3rd vote ...	293,686
The first-class armoured cruiser "H," 3rd vote ...	391,580
The small cruiser "Ersatz Bussard," final vote ...	73,420
The small cruiser "Ersatz Falke," final vote ...	73,420
The first-class battleship "Ersatz Hagen," 2nd vote ...	513,954
The first-class battleship "Ersatz Ägir," 2nd vote ...	513,954
The first-class battleship "Ersatz Odin," 2nd vote ...	513,954
The first-class armoured cruiser "J," 2nd vote ...	538,420
The small cruiser "Ersatz Cormoran," 2nd vote ...	122,370
" " "Ersatz Condor," 2nd vote ...	122,370
Provision of torpedo nets, 2nd vote ...	132,160
The first-class battleship "Ersatz Kurfürst Friedrich Wilhelm," 1st vote ...	269,210
The first-class battleship "Ersatz Weissenburg," 1st vote...	269,210
The first-class battleship "S," ¹ 1st vote ...	269,210
The first-class armoured cruiser "K," 1st vote ...	244,738
The small cruiser "Ersatz Seeadler," 1st vote ...	122,370
The small cruiser "Ersatz Geier," 1st vote ...	122,370
Three small coast-surveying vessels, in replacement, 1st vote	7,340
A torpedo-boat flotilla, final vote ...	445,423
Torpedo-boat flotilla, 1st vote ...	489,476
Construction of Submarines and trials ...	734,214
Total for new construction ...	£7,792,423
Repairs and alterations, Battleships ...	53,842
" " Large Cruisers ...	53,842
" " Small Cruisers ...	14,684
Total ...	£7,914,831

SUMMARY.**Expenditure.**

	Proposed for 1911	Voted, 1910.
Ordinary Permanent Estimates ...	£8,184,670	£7,701,150
New Construction, etc. ...	7,914,831	7,715,125
Armaments (guns, torpedoes, mines) ...	4,335,438	4,206,070
Other items (Dockyards, Buildings, etc.) ...	672,044	637,213
Extraordinary Estimates (Dockyards, Artillery Administration, etc.) ...	946,643	985,926
Total ...	£22,053,626	£21,245,484

Etat für die Verwaltung der Kaiserlichen Marine auf das Rechnungsjahr, 1911.

WIRELESS STATIONS.—The wireless station at Swinemünde is complete and has been taken into use. The station has a radius of action of 500 kms. (312 miles, about). The wireless station at Kiao-Chau has been improved and enlarged, and now has a radius of about 400 miles. £7,500 were allotted in the Colonial Estimates for this work.

¹ The first-class battleship "S" is not a replacing (Ersatz) ship, but an additional ship to the strength of the Fleet.

MILITARY NOTES⁽¹⁾.

BRITISH EMPIRE.

Home.

APPOINTMENTS.—The King has been graciously pleased to approve of the appointment of Major-General J. S. Cowans, C.B., M.V.O., now Director-General of the Territorial Force, as Quartermaster-General to the Forces from April 2nd next.

His Majesty has also been graciously pleased to approve of Major-General Sir C. F. Hadden, K.C.B., being granted an extension of tenure for one year from February 8th next in his appointment as Master-General of the Ordnance.

TROOPS ACTING IN AID OF THE CIVIL POWER.—The Secretary of the War Office announces that, in reply to enquiries asking whether any special instructions had been issued to the troops on strike duty during the strikes last August, Colonel Seely, Parliamentary Under-Secretary of State for War, has caused a letter to be sent to the following effect, viz. :—

"No special instructions in regard to firing were issued to the troops called out on this occasion except an order that whenever possible a bugle should be blown before reading the proclamation under the Riot Act, and a letter calling attention to paragraphs 948 to 968 in the King's Regulations defining the duties of troops when acting in aid of the civil power.

"Paragraphs 963, 964, and 965, have special reference to the use of rifle fire, and it will be observed that the instructions are carefully limited to such as are necessary to prevent the firing being more than is called for by the needs of the actual situation at the moment, and to secure that it is so directed as to avoid danger to persons who are not sharers in the acts which have necessitated the use of force, or whose participation in the disturbances is of a remote degree.

"It must be apparent that, for example, firing either too high or too low is likely to defeat these objects, and, indeed in the latter case the result might even be increased loss of life. A shot aimed over the heads of a crowd will perhaps kill or injure a person entirely unconnected with the riots, while a bullet aimed at the ground will ricochet and probably cause far more serious wounds than a direct hit."

THE TERRITORIAL FORCE.—In a speech delivered at Tarent in September the Secretary of State for War announced that during this year 35,000 recruits had joined the Territorial Force, while 25,000 men entitled to their discharge had re-engaged. On July 1st, the force numbered 270,000, or five-sixths of its total establishment.

The statement, which had been erroneously attributed to him, that the Territorial Force could not be made use of till 6 months after the outbreak of war, was, he added, a myth. The Territorials would be used, for what they were worth, on the first day of a war.

South African Union.

The South African Press was much agitated during July by an article in the *Volkstem*—a Transvaal paper which is regarded as the semi-official mouthpiece of Dutch opinion—concerning the relations between the Do-

⁽¹⁾ Includes notes regarding important political events in foreign countries.

British Empire—continued.

minions and the Mother Country in war time. The *Volkstem* asserted that the Union Constitution would admit of South Africa remaining neutral in case of a war in which "England and the other independent States of the Empire" might be involved; and that such an attitude would dispense with the necessity for protection by British ships and troops.

General Botha, writing from Kissingen, in reply to a question addressed to him by Reuters' Agency, stated that he did not agree with the suggestions made by the *Volkstem*.

"It is absurd" he wrote "to contend that, because it may be in the interest of the Empire that a portion should remain neutral, the enemy would necessarily look upon it in the same light. The suggestion put forward seems to me so ridiculous that it is almost unnecessary to discuss it. The whole matter in a nutshell was recently set forward in the following words:—'If it is to the advantage of the Empire to have a number of Colonies neutral, obviously it is to the disadvantage of the enemy. The enemy decides whether any part of the Empire is to be left alone.' With this I entirely agree."

Speaking again on the same subject in South Africa on September 26th, General Botha is reported to have said that, though the Government of a self-governing Colony alone could decide whether its troops and ships should be sent out of its own territory, this did not amount to a declaration of neutrality; neutrality would involve treating Great Britain on exactly the same footing as the enemy. It would be impossible for any Dominion of the Empire—Canada as little as South Africa—to remain neutral without cutting itself asunder from the Empire. It was impossible for one portion of the Empire to go to war while another remained neutral. South Africa to-day was in a position of total helplessness. Therefore the Government would establish a defence force at the earliest moment, to relieve the Empire as much as possible of the task of defending the country. Should the unhappy day ever dawn when the common Fatherland was attacked, Dutch and English Afrikanders would be found, shoulder to shoulder, defending the Fatherland to the very last.

INDIA.

NORTH-WEST FRONTIER.—Considerable tribal fighting of a local nature took place in Dir during June and July but without menacing the safety of the Chitral road. Large numbers of arms are being openly purchased at Kabul by frontier tribesmen, who have flocked there for the purpose during the summer.

ABOR EXPEDITION.—The collection of supplies at Dibrugarh, enlistment of coolie corps, and the necessary administrative arrangements in connection with the Abor Expeditionary Force have been in progress throughout September.

The advance will probably commence in the first half of October. It is reported that the Abor tribes are preparing to offer a strong resistance. In view of the mountainous and dense jungle clad nature of the terrain, it is expected that the operations will last till the end of March, 1912. The force which is under the command of Major-General H. Bower, C.B., Commanding the Assam Brigade, will be based on Kobo (on the Brahmaputra, about 5 miles S.W. of Sadiya), and is to operate in two columns. (See map in September JOURNAL, page 1225.)

Afghanistan.

MOTOR SERVICE.—It is reported that the Amir is desirous of establish-

British Empire—continued.

ing a bi-weekly motor van postal service between Peshawar and Kabul; with this end in view military labour is being employed for the improvement of roads communicating with Kabul. Four companies of Sappers have been ordered to Gandamak for work on the section from that place to Mamakhel, and a similar number are to improve the road between Ghazni and Kandahar. Fifty men have been sent to Bombay for instruction as motor drivers.

ARMY.—The Amir has ordered Prince Inayatulla to raise a cavalry regiment of Durani youths.

Efforts are reported to be in progress to re-arm the whole Afghan Army, the regular troops with Lee-Metfords and the Khassadars with Martinis.

THE MILITARY DEFENCE OF THE EMPIRE.

EXTRACTS FROM THE REPORT OF THE COMMITTEE OF THE IMPERIAL CONFERENCE CONVENED AT THE WAR OFFICE IN JUNE, 1911.¹

(E.)—THE TERMS UPON WHICH THE SERVICES OF THE INSPECTOR-GENERAL OF THE OVERSEA FORCES COULD BE INVITED IF THE DOMINION GOVERNMENTS SO DESIRE.

The following Memorandum by the General Staff was laid before the Committee:—

In considering arrangements for the inspection of the forces of the self-governing Dominions it is understood that such inspections can only take place on the invitation of the Governments concerned.

In the event of the Government of a self-governing Dominion desiring that its forces should be inspected, the Army Council will be prepared to make the necessary arrangements for the inspection to be carried out by the Inspector-General of the Oversea Forces.

In such cases the duties of the Inspector-General of the Oversea Forces will be similar, "mutatis mutandis," to those defined in paragraphs 7 to 10 and 13 of War Office Memorandum, dated 20th June, 1910, for the inspection of those portions of the Empire outside the United Kingdom and the limits of the Mediterranean Command, where troops under the control of the Home Government are stationed.

These duties would be as follows:—²

He must form a judgment on the efficiency of officers and men, on the handling of troops, on the standard and system of training, on the suitability of equipment, and generally on all that affects the readiness of the forces for war.

For the proper discharge of his functions it is necessary that he should—

- (a.) By means of inspection ascertain whether the training, instruction and preparation for war of the forces of the Dominion concerned, as laid down by Regulations, are fully carried out in the various commands, and whether a uniform standard of efficiency is attained.

¹ Subheads A and B of this Report were given in September JOURNAL, page 1226. Subheads C, D, and F. dealing with educational questions, will be given in a subsequent number of the JOURNAL.

² The duties of the Inspector-General of Oversea Forces have since been further defined in a Memorandum (Parl. Paper, Cd. 5598), extracts from which will be given in a subsequent number of the JOURNAL.

British Empire—continued.

(b.) Advise as to changes of regulations bearing on (a.).

(c.) Acquaint the Minister of Defence with the state of the forces of the Dominion concerned as regards both personnel and equipment.

2. The functions of the Inspector-General of the Oversea Forces should be exercised with due regard to the general system of inspection applicable to an army, this system as carried out consecutively by Regimental Commanders, Commanders of Brigades, General Officers Commanding and local Inspectors-General being of a progressive nature. In every case the object of an inspection is to ascertain the results achieved by the officer responsible for the efficiency of the unit or body of troops concerned. It is the duty of an Inspecting Officer to bring omissions and defects to notice, but this should be done without fettering the initiative or trenching on the responsibility of the Commanding Officer in regard to the training of his men.

In addition to the duties enumerated above, the inspection of the coast defences of a Dominion will be included in the functions of the Inspector-General of the Oversea Forces.

The Inspector-General of the Oversea Forces would report to the Minister of Defence of the Dominion concerned, forwarding a copy of his report for the information of the Army Council.

Unless specially asked to do so by the Government of a Dominion, it would not be the duty of the Inspector-General to deal with questions of military policy, war organizations, schemes of local defence, the system of education of officers or similar matters, on which the Local Headquarters Section of the Imperial General Staff are responsible for advising their respective governments. His opinion on these subjects would not, until confirmed by competent authority, commit the War Office or his Majesty's Government.

3. The Chief of the Imperial General Staff being charged by the Secretary of State for War with the military defence of the Empire, and with the system of military training, and with war organization, so far as the forces under the control of the Home Government are concerned, it would seem expedient, should the Governments of the Dominions require advice on such matters other than that to be obtained from their local sections of the Imperial General Staff, that application for such advice should be made to the War Office through the approved channel. Otherwise divergent views may be expressed, and confusion may result.

4. The question of sharing between the Home and Dominion Governments the expenses incurred in connection with visits of inspection of the Inspector-General of the Oversea Forces must be considered; and it is suggested that the following proposal would meet the case as regards inspections in Dominions in which no forces under the control of the Home Government are employed:—

THE HOME GOVERNMENT TO BE LIABLE FOR—Pay of the Inspector-General of the Oversea Forces and his Staff; passages one way; travelling expenses and allowances in the United Kingdom.

THE DOMINION TO BE LIABLE FOR—Passages one way; travelling expenses and allowances in the Dominion.

In the case of a Dominion, such as South Africa, where troops under the control of the Home Government are stationed, it would save time and money if any desired inspection of the Dominion forces could be carried out when the Inspector-General was visiting the Dominion for the purpose of inspecting the regular troops; the liability of the Dominion

British Empire—continued.

Government being then limited to any extra expenses due to the inspection of their own forces.

5. By the 1st November in each year the Inspector-General of the Oversea Forces submits, for the approval of the Army Council, a programme of his inspections during the following year, beginning on the 1st April. In the event of the Government of a self-governing Dominion desiring its forces to be inspected, it will be convenient that application should be made to the Army Council not later than the 1st August in the year preceding that in which it is desired the inspection should take place.

FOREIGN POWERS.**AUSTRIA.**

APPOINTMENTS.—It is officially announced that the "Common" War Minister, General Baron von Schonaich, has resigned, and is to be succeeded by General von Auffenberg. The late Minister's resignation is said to be due to differences of opinion with the Archduke Franz Ferdinand regarding the new Law of Military Service, the Archduke considering that too great concessions have been made to Hungary.

ARMY CORPS OFFICERS' SCHOOLS.—The Army Corps Officers' Schools for the education and instruction of regimental officers are shortly to be re-organized. Hitherto the commandant and instructors have been appointed from local units for temporary duty, but before the end of the year 12 general officers are to be appointed as commandants and 50 staff officers as instructors. During 1911-12, 16 of these Army Corps Officers' Schools, i.e., 1 per Army Corps, are to be formed. The course of instruction at these schools, which all subalterns have to attend before promotion, is to last from 2nd November to 30th June.

SUPPLY OF N.C.O.'s.—Considerable opposition has been aroused by one of the provisions of the new "Law of Military Service," which says down that, in order to provide the number of N.C.O.'s required for the army, a certain proportion of picked men are to be retained for a third year's service. It is pointed out that good men may be tempted to try and avoid retention for a third year by committing offences against discipline and by general slackness. It is possible that other means may be employed to obtain the necessary number of N.C.O.'s.

SCHOOLS FOR TRAINING N.C.O.'s.—It is stated that, as a result of the approaching introduction of the 2 years' term of service in the "Common" army and the consequent necessity for an increase in the instructional staff, a number of schools are to be instituted for the training of former pupils of grammar and national schools to fit them for the duties of long service N.C.O.'s.

MILITARY TRAINING OF YOUTHS.—With a view to stimulating general interest in military matters the War Office has decided to allow pupils of secondary schools to attend military training and exercise as spectators, and recommends visits to the following establishments and courses of training:—field practices of infantry and machine-gun sections, firing practices of field and fortress artillery, bridging and hasty demolition work of pioneer troops, and exercises of air corps.

BULGARIA.

CHANGES IN ORGANIZATION.—The following is a summary of the changes in the Bulgarian Army, which were foreshadowed in the Army Estimates for 1911:—

Bulgaria—continued.

The administration of General Nicolaieff as Minister for War is characterised by continuity and calm. It is true that the ordinary expenditure has risen by roughly £200,000 since the regeneration of Turkey, and that the extraordinary expenditure has remained remarkably high. Still any very great expansion of the estimates has been avoided. Of the general revenue of the country for 1911 (£7,120,000), £1,584,000 are destined for the Army and Navy, in theory £5,240 less than in 1910. It should be noted that, to judge from Bulgarian newspapers, the war organization of the army, which had been elaborated in 1903 by General Savvoff, who was then War Minister, and had been considerably modified by his successor, General Nicolaieff, will now again be put into force as soon as the oldest soldiers of the *Opolcheniye* (militia) who were recruited somewhat irregularly in 1878 have ceased to be liable for service. According to this scheme, in 1904, there were provided, in case of war, eighteen mobilized infantry divisions of two brigades each, each division consisting of four regiments (each of four battalions). This formation was arrived at by each peace company (288 of all ranks) simply expanding itself to a battalion at war strength. Thus the eight peace companies of each of the thirty-six regiments formed the cadre of a brigade at war strength. It was thought at the time that this scheme could not be carried out in practice and also that the supply of officers available would not be sufficient. Accordingly the provision of a third brigade only, for each division, was contemplated in case of war. This is now considered insufficient, and therefore a return to the plans of Savvoff is contemplated.

The Bulgarian army organization is clear and simple. In case of war 10 per cent. of the Christian population is to be called to arms; this gives not much less than 400,000 men. These will be organized as follows:—1st, The Field Army (21 year-classes of infantry and twenty of other arms); 2nd, Reinforcing units for which at least two new year-classes of recruits will be at once called up, and which will train volunteers. 3rd, The Reserve Army (four year-classes of infantry and five of other arms), the *Opolcheniye* (militia) of the First Levy which will probably go under arms at once. 4th, Garrison Troops (two year-classes), the *Opolcheniye* (militia) of the Second Levy. No increase of expense in peace has been incurred by these measures. Indeed the number of Section-commandants has been reduced by one-half.

In the new Budget provision is made for the posts of two cavalry lieutenant-colonels to command the newly organized cavalry regiments, No. 1 and 2, which have been divided into two half regiments of 2 squadrons each. In the Field Artillery provision is made for one lieutenant-colonel as second in command to the regimental commander, and one major to command a brigade for each of the nine Field Artillery regiments. These new posts foreshadow the intended sub-division of the Field Artillery regiments into three brigades of two batteries each, instead of the present organization of two brigades of three batteries each. The intention of this step is to facilitate the expansion of the six batteries of each Field Artillery regiment to nine batteries in case of war.

The establishment of field batteries which had been diminished by 20 men in 1909, had to be raised by 10 men in 1910, as the batteries thus reduced had been found unsuitable for training purposes. In the proposals for 1911 the peace footing of the batteries is once more to be raised, and each battery is to be 110 strong.

In the Mountain Artillery the present 3 brigades of 4 batteries are to be transformed into 3 regiments of two brigades of two batteries each.

Bulgaria—continued.

As regards the Heavy and Fortress Artillery, orders had been given as early as the year 1909 that one company from each of the Fortress Artillery battalions should be attached to the Field Artillery regiments at Sofia, Shumla and Stara Tagora to train the heavy batteries intended for the 9 Field Artillery regiments of the Field Army on mobilization. In the Budget of 1911 this transitional condition is provided for, dividing the 3 Fortress Artillery battalions into 2 companies instead of three. In the place of the third companies three cadre howitzer batteries are formed with three captains as commanders, and 9 captains and 9 lieutenants or sub-lieutenants from these cadres; three howitzer brigades of heavy artillery are to be formed in case of mobilization, and each of the 9 Field Artillery regiments is to receive one of them. The 12-cm. howitzers ordered from Schneider are intended for these batteries.

As regards Engineers, according to the new estimates for the Railway Battalion a technical company is to be formed from the hitherto independent aeronautical and automobile sections, and a new search light section is to be raised. At the same time the strength of the automobile section is to be raised by one officer and 34 men and is to be divided into three troops. The searchlight section is to consist of 1 officer and 21 men.

In the Telegraph Corps a fourth company is to be raised.

Finally a new departure in this year's estimates is the fact that a real Intendance Department is to be created out of the provisional organization hitherto existing. Each division is to have its own Intendance Department, which will be organized in two sections, one artificers detachment and one administration company.

—*Précis from Internationale Revue über Gesamte Armeen und Flotten.*

CHINA.

TELEGRAPH REORGANIZATION.—An important step has been taken in the transfer to the Imperial Chinese Telegraph Administration of that portion of the Chinese telegraph service which has been under the control of the Board of Communications. The former has had control of the telegraph service in China with the exception of the services in the provinces of Kuang-tung, Kuang-hsi, Yun-nan, Kuei-chou, Shan-hsi, Shensi, Mongolia, Manchuria, and Northern Chih-li, but now the service in all these provinces comes under its control also. It is expected that the consolidation will result in a more unified and—because of more direct responsibility—in a better service generally.

SSU-CH'UAN-HU-PEI RAILWAY.—On the Ichang-Wan Hsien section of the Ssu-ch'uan-Hu-pei railway construction trains are now running twice daily between Ichang wharf and the railhead, a distance of 6 miles. With the exception of two cuttings the line could now be laid some 20 miles. Two 1,000-foot tunnels are in progress 25 miles from Ichang, and one 700-foot tunnel about 15 miles from that city is completed. The presence of water has added greatly to the difficulty of tunnelling.

GERMAN OFFICERS IN CHINA.—It appears that the Chinese War Office has decided to engage 3 German Officers as instructors for the Army High School. This may be regarded as a departure from the policy which China has been pursuing lately in endeavouring to do without foreign instructors.

TIENTSIN-PU-K'OU RAILWAY.—In continuation of the details regarding the Tientsin-Pu-K'ou (Nonking) Railway which were given in the

China—continued.

July, 1911, JOURNAL, page 941, the following interesting particulars are to hand regarding the bridge over the Yellow River at Chinan Fu in Shantung Province, one of the most important railway bridges in China. At the point of crossing the river is about 500 yards wide, the current is swift and the bed deep. This entailed extra trouble in building up the piers. 180-foot piles were rammed in, and concrete was then forced in between the piles by pneumatic pressure so as to convert the whole into one solid foundation. The masonry consists of huge stones and concrete. The blocks are especially large at the heads of the piers so as to resist the ice pressure in the winter. The iron bridgework is to be mounted during the autumn and winter 1911-12. The spans are about 427, 550 and 427 feet. It is hoped to complete the whole bridge by the autumn of 1912.

With the exception of this bridge, the northern (German) section of the Tientsin-Pu-K'ou Railway is expected to be finished along its entire length, viz., to the southern frontier of Shan-tung, the distance between this and Tientsin is about 390 miles.

Along the southern (British) section, 236 miles long, trains were running in July, 1911, from Pu-K'ou to Hsu-chou Fu, 211 miles.

SHANTUNG RAILWAY (CHINAN FU-TSINGTAN).—The whole rolling stock now consists of 41 engines, 100 passenger cars, 926 goods wagons. On 1st May, 1911, an agreement was signed between this company and the Tientsin-Pu-K'ou Railway for running cars over each other's lines.

ANTUNG-MUKDEN RAILWAY (Japanese).—The journey is now made in a day. The portion from Chi-kuan Shan to Peu-hoi-hu only is narrow gauge. Through traffic (standard gauge) will probably commence at the end of 1911.

FRANCE.

APPOINTMENTS.—General Durand has retired from the Active Army on reaching the age of 65, and his place on the Conseil Supérieur de Guerre has been taken by General Archinard, until then in command of the Colonial Army Corps. General Vauthier from the 4th Infantry Division has been appointed commander of the Colonial Corps.

ARMY MANŒUVRES.—The Army Manœuvres took place between Vesoul and Belfort, from the 11th to 13th September. The Troops engaged consisted of the 7th Corps (13th, 14th, and 41st divisions), a provisional brigade formed of 2 battalions Zouaves, and 2 battalions Chasseurs, a brigade from the 8th Corps, and the 8th Cavalry Division. The great feature of the manœuvres was the work accomplished by the aeroplanes. (See Aeronautical Notes.)

STAFF CONFERENCES.—It has been decided to hold annually at the War Office a conference of the Chiefs and Sub-Chiefs of the Army Corps and Divisional Staffs, for the purpose of developing unity of doctrine.

MILITARY REQUISITIONS.—A new law has been passed, amending the law of July, 1877, on military requisitions. The War Office has now on mobilization the right to call upon any industrial factory or concern to manufacture solely for the Army, and can, if necessary, actually take over the management of the establishment.

INCREASED PENSIONS.—Last year the rates of pay of captains and subalterns were raised. The finance law of 1911 has now made a corresponding increase in the pensions of these ranks, the actual rate varying with the scale of pay which the officer was receiving at the time of his retirement. A captain can in the future have a pension of from £116 to

France—continued.

£156, instead of from £92 to £132, and a subaltern one of from £92 to £132 instead of from £68 to £100.

INCREASE IN THE NUMBER OF MEDICAL OFFICERS.—It has been for some time recognized that the number of medical officers authorized by the law of 15th April, 1904, was insufficient for the needs of the Army. The Legislature has accordingly passed a law increasing by 235 the number of medical officers. The following table shows the new and old establishments.

						New	Old
Lieut.-Generals	...	...	...	...	...	5	3
Major-Generals	...	...	...	...	...	20	14
Colonels	...	...	...	...	...	50	42
Lieut.-Colonels	...	...	...	...	...	95	60
Majors	...	...	...	...	...	370	340
Captains	...	...	...	...	...	580	510
Subalterns	...	...	...	...	...	590	506
Total						1,710	1,475

GERMANY.

The German Crown Prince has taken over the command of the 1st Leibhusaren Regiment, stationed at Neufahrwasser, near Danzig.

THE IMPERIAL MANŒUVRES.—The German Imperial Manœuvres took place from September 11th to 13th, in the country north of Berlin and west of Stettin. Four Army Corps were engaged, and the total number of troops employed was about 100,000.

THE NEW FIELD SERVICE DRESS.—It is reported that complaints have been received that the material does not wear well. It is also complained that difficulty is experienced by Staff and Orderly Officers in distinguishing battalions and regiments, etc. The colour is said to be most suitable, but in some cases the ornaments and badges are inclined to catch the light, and thus render individuals very visible at a distance.

NEW ELECTRIC TARGET.—Experiments are being made with an electric target. The exact result of each shot is indicated by two groups of figures.

REORGANIZATION OF THE TRAIN.—From April 1st, 1912, there is to be a reorganization of the Train. The changes involved will result in a complete separation of the Troops of the Train from the Administrative Department.

THE NEW MACHINE GUN COMPANIES.—The companies, numbered 13th company of each regiment, will be attached for training and discipline to a battalion. The men wear the number 13 on the buttons of their shoulder straps. In order to provide officers of the Reserve for duty with machine-gun companies it has been decided to admit 4 one-year volunteers for service with each company commencing in October—these men can be transferred to the Infantry if found unsuitable for the work.

MAROCCO.**(A) Political.**

FRANCE AND GERMANY.—The negotiations between France and Germany were continued during September, with alternations of pessimism and optimism in both countries as to the possibility of a speedy solution. On the 9th September, the German counter proposals were handed to the French Government, and on the 13th the French reply was approved by the President. It was believed that one of the chief points at issue

Marocco—continued.

was the extent to which Germany was to share in economic undertakings in Marocco. During the latter part of the month, the conversations were continued verbally, and at the end of the month it was generally understood that an agreement had been reached on the subject of Marocco, leaving the question of territorial compensation for Germany in the French Congo still to be discussed.

(B) Operations.

FRENCH SPHERE.—General Moinier left Mequinez on August 28th with an escort of 5 battalions, 1 squadron and 1 battery under General Dalbiez. Fez was reached on August 31st.

On September 3rd, General Dalbiez left Fez for Sefru, where a post of 500 Shereefian troops was left under Lieut. Derville, which was unsuccessfully attacked by the Ait Yussi on September 7th.

On September 9th, Major Brémond left Fez with 1,500 regular Shereefian troops to reinforce the Sefru post. He was attacked on the 11th, but beat off his opponents after a sharp skirmish, in which the French had 8 killed, including 1 officer, and 15 wounded. On the 14th, in another skirmish, Brémond had 4 killed and 5 wounded.

On receipt of this news, General Dalbiez again left for Sefru. On 15th September, Dalbiez's and Brémond's columns carried out a successful sweeping movement round as far as Mezdu (6 miles south of Fez). The Moors were everywhere driven back, and the "kasbah" at Mezdu was blown up; the French had 4 casualties.

SPANISH SPHERE.—Latterly, as described in recent numbers of the JOURNAL, General Aldave, Governor of Melilla, has extended the area in Spanish military occupation to the right bank of the River Kert. This advance has caused uneasiness among the tribes of the left bank, and they have been encouraged to action by the unsubdued tribes facing the Spanish fort of Alhucemas. On August 24th, a survey party near Ras-el-Medua on the right bank of the Kert was attacked and four men were killed. Punitive measures were adopted by Colonel Larrea, under orders from General Aldave, from Tauriat Zag on August 29th. Various engagements ensued, considerable losses were inflicted on the hostile "harka," and several villages were destroyed.

Skirmishes continued, however, round the outposts to the south of the Kert River, and, in view of the frequent attacks made upon Spanish posts and an extension of the hostile movement among the tribes, 3,000 men were sent to Melilla as reinforcements from Spain, and landed on September 10th. The men-of-war also received orders to bombard the hostile villages near Alhucemas.

On September 12th, a successful action at Imarufed and Izhafen on the right bank of the Kert is reported to have resulted in the Spaniards losing 3 officers and 15 men killed and 77 wounded; the tribesmen had 600 to 700 casualties. Skirmishes still continue in the Kert area.

IFNL.—No further developments appear to have taken place in this quarter; so far as is known no Spanish troops have, as yet, been landed.

PERSIA.

THE RUSSO-GERMAN AGREEMENT.—The line north of which Germany undertakes to seek no concessions is: "a line starting from Kasri Shirin passing through Ispahan, Yezd and Khakh, and reaching the Afghan frontier on the parallel of Gazik." In the version of the agreement on page 1235 of the September JOURNAL (which was taken from a telegraphed

Persia—continued.

summary), the line was described as running from "Kasri Shirin to the Afghan border along the parallel of Gazik."

THE EX-SHAH.—From the meagre reports available the sequence of events and precise position of affairs in regard to the ex-Shah movement during September were not very clear.

The situation on the 27th September appeared to be that the ex-Shah himself was a fugitive near Gumesh Tepe; that his supporters in the north and north-west had been decisively defeated by Government forces during September; while Salar-ed-Dowleh to the S.W. of Tehran had alone met with some success. The latter, who now posed as an aspirant to the throne, was decisively defeated at Baghishah, on the 27th September, with the loss of some 600 men and 12 guns. He is reported to have fled through Hamadan into Luristan.

The temper of the people and their interest in the movement appear uncertain; the lawlessness prevalent in most parts of the country has been accentuated by the present state of affairs, and anarchy prevails in many places.

Serious disturbances and fighting have taken place at Shiraz; trade is at a standstill on the roads in the S.W. of Persia.

RUSSIA.

MECHANICAL TRANSPORT TRIALS.—Sixteen motor lorries took part in the War Office trials. They were driven by the personnel of the instructional automobile company. The trials included a run from St. Petersburg to Moscow and return. Runs over unmetalled roads round Moscow were also on the programme, but this part of the trials was abandoned as the wheels sank into the muddy roads above the felloes. The weight of the loads carried was about 2½ tons. One vehicle only failed to reach Moscow.

EDUCATION.—Commencing in 1912, English will be taught in certain cadet corps as an alternative to German. The reason given for the innovation is that English is a language widely used in the East.

"PLAY SOLDIERS" (POTYESHNIÉ).—The "Boy Scout" movement is being encouraged by the Russian Government as a means of providing the loyalty and discipline which is said to be lacking in Russian school life. It is proposed to effect this object by introducing a system of voluntary military training of Russian boyhood, costing the Government nothing but the expense of supervision.

A special commission was therefore appointed with Lieutenant-General Lesha as president, which drafted a law—now confirmed by the Tsar—according to which all officers of the Army and Navy, and all societies, and all persons of approved standing, may organize detachments of boys under 15 years for the purpose of preparing them for military service. Boys so enrolled must be of good physique and character, and obtain the consent of their parents. Each organizer is responsible for the finances of his detachment.

The Opposition and Radical Press are inclined to ridicule the movement, and more serious opposition may come from the Zemstra (County Councils), the radical and liberal members of which do not approve of their schools being interfered with by the church or military authorities.

In all other quarters, however, there appears to be considerable enthusiasm in favour of the movement, which especially showed itself in St. Petersburg on the 10th September, when the Tsar reviewed 6,000 "potyeshnie," collected from all parts of the Empire including Tashkent and Tiflis.

UNITED STATES.

PANAMA ZONE.—Orders have been issued that the regiment of infantry now at San Antonio, Texas, is to proceed to the canal zone for garrison duty there.

This regiment will be quartered in a number of buildings which were formerly occupied by the employees of the Panama Canal Commission.

THE FORTIFICATION OF THE PANAMA CANAL.—As already mentioned (see JOURNAL, pp. 527 and 1239) a sum of £600,000 has been voted for fortifying the canal; and work on the fortifications was commenced in August. The following note on the proposed works is condensed from the German *Internationale Revue* for June, 1911:—

The works for the defence of the Panama Canal have had to be designed so as not only to give direct protection to the canal works but to prevent an enemy approaching so close as to hinder the deployment of a fleet issuing from the canal.



PACIFIC COAST.

Scale 60 m. = 1 in.

Figures denote the canal zone:—

- | | |
|---------------|-----------|
| 1 Cristobal. | 4 Empire. |
| 2 Buenavista. | 5 Acona. |
| 3 Gorgona. | |

The chief works are, of course, those on the Pacific Coast. The original intention of taking the Galapagos Islands, which lie 120 miles off the west coast of South America, on a 99 years lease from the State of Ecuador, in return for a sum of £8,333,333, has fallen to the ground. The idea of fortifying the little islands of Naos, Perico, and Flamenco, has also been abandoned, on account of their small strategical importance; instead, powerful works are to be constructed on the islands of Taboga and Taboguilla, which lie off the entrance to the canal on the Pacific side; the works are to be armed with eight 12-inch, and twelve 10-inch guns, as well as with twenty-four 12-inch mortars.

The Pearl Islands, which lie some 70 miles to the south of Panama, are not to be fortified, as an enemy could not directly threaten the entrance to the canal from them, while they are too close to the Canal for him to use them as a base for his fleet with a view to operations against Panama. Works are also to be constructed on the mainland, on Ancon Hill and opposite, below the Cerro San Juan.

On the Atlantic coast strong *points d'appui* are already available in Cuba and Porto Rico; it is, therefore, only intended to construct works between Punta Brujas and Punta del Toro, with a view to protecting Limon Bay and the entrance to the Canal.

The most vulnerable points to an attack by a landing party are the three great locks, viz: the famous Gatun locks on the Atlantic side; the Pedro Miguel locks, and the Miraflores locks on the Pacific side. The latter are only six miles distant from the Pacific coast. As the capture of these locks would mean the blocking of the canal, it is proposed to surround them with a wide ring of modern land forts. The Miraflores and Pedro Miguel locks are situated in the midst of hilly country, which should not be difficult to fortify. The Gatun locks will be defended by forts on Gatun Hill, on one side, and by works near Mount Hope-Reservoir, above Colon, on the other.

AERONAUTICAL NOTES.

GREAT BRITAIN.

ROYAL AERIAL MAIL.—An aerial mail service between Hendon and Windsor was inaugurated on the 9th September. The first consignment of mails was carried in a Bleriot monoplane, the distance of 19 miles being covered in 10 minutes.

FATAL ACCIDENT AT HENDON.—On September 17th, Lieutenant R. Cammell, R. E., Army Air Battalion, while executing a practice flight on a Valkyrie aeroplane at Hendon, fell with his machine from a height of about 50 feet, and was killed.

WRECK OF THE NAVAL AIRSHIP.—On September 24th, the naval airship broke in two while being taken out of her shed, and became a wreck, thus adding one more to the number of disasters to dirigibles of the rigid type.

It is reported in the press that, at Cardiff, communication was established by wireless telephony with an airman flying at 50 miles an hour.

AUSTRIA-HUNGARY.

THE STAGL-MANNSBARTH AIRSHIP.—The Stagl-Mannsbarth airship, which was not at first a success, and in which several important alterations have been made, has latterly shown a considerable turn of speed and great steadiness in somewhat unfavourable weather. During two out and home journeys of 186 and 143 miles respectively, an average speed of 37 miles an hour was maintained, with the two 150 h.p. motors only working at two-thirds speed.

EXPERIMENTS.—Successful experiments in throwing bombs and grenades on to marked areas have been carried out by the crew of the military dirigible "Parseval."

Experiments have recently been carried out in following with searchlights an aeroplane during flight, and also in dropping a species of star shell from aeroplanes to light up important tactical points.

AIRCRAFT AT MANŒUVRES.—This year aeroplanes have been employed for the first time at manœuvres in Austria-Hungary. At the cavalry manœuvres in South Hungary in August, two groups, composed respectively of 3 military and 3 civilian aviators, were attached to the opposing sides, and valuable experience was gained. The greatest success seems to have been attained by two civilians, carrying officers as observers. On two occasions, accurate information of the enemy's movements was gained, and the officers were landed as soon as the reconnaissance was completed, and conveyed by motor cars to headquarters to report.

AEROPLANE FLIGHTS BY NIGHT.—Trial flights have been made by night on an Etrich monoplane to test the possibility of steering a course and landing at fixed points in the dark. Fires were lighted at various points where the aeroplane was to descend, and seven powerful acetylene lamps were attached to the front of the frame of the aeroplane to throw a light downwards and to each flank.

FRANCE.

DIRIGIBLES.—A new dirigible "L'Adjudant Reau," built by the Astra firm has been undergoing her trials. She made an extremely successful trip from Paris to the frontier and back, and now holds the record for long flight, having been up for nearly $21\frac{1}{2}$ hours, and covered over 559 miles. This dirigible is of the non-rigid type, and is 308 feet long, with a maximum diameter of 46 feet, and a capacity of 2,924,247 cubic feet. There are 2 motors, each of 120 h.p., driving 3 screws.

The "Capitaine Marchal," a new Lebaudy dirigible, has also been making successful flights.

It is rumoured that the War Office intends to purchase the Clément Aero park and sheds at Lemotte Breuil near Compiègne.

AVIATION.—The past month has again witnessed 3 fatal accidents to military aviators. Captain Camine and Lieutenant de Grailly were killed while flying to Vesoul for the army manoeuvres, while the well-known expert, Nieuport, who was using his own machine as a reservist, was killed during the manoeuvres of the 6th Corps.

Interesting experiments took place at the end of August and beginning of September. At Verdun aeroplanes were used to observe the fire of garrison artillery at a concerted target some 8,000 yards distant. The experiment is reported to have been most successful, the aeroplanes flying at a height of about 4,000 feet.

On another day, 3 aeroplanes, two of them biplanes, were sent to reconnoitre the fortress of Toul. They flew over the latter place at a height of 4,000 feet, and not only were able to report on new works, but Captain Lebeau, by means of an apparatus of his invention, took photographs, although travelling at some 60 miles an hour at the above height. There were about 24 aeroplanes employed during the Army manoeuvres, and the results of their reconnaissances effected from an average altitude of 3,000 feet, were reported by the various generals to have been of the highest value.

A section of 3 monoplanes was attached permanently to an artillery brigade; each machine was provided with mobile horse-drawn transport which rendered it independent of all sheds and parks, and which included a form of covered gypsy van, the body of which rested on one pair of wheels, about the centre, while an ordinary artillery limber acted as a fore-carriage and supported the front.

The advantages claimed for this pattern of vehicle, which is the invention of Captain Bellenger, are: that it is comparatively mobile and easy to entrain or detrain, while it is capacious enough to afford shelter for the personnel, besides carrying a large quantity of spare parts and stores for the aeroplanes.

INSTRUCTIONS FOR AIRCRAFT AT THE FRENCH MANŒUVRES.—The following instructions had been issued before the manoeuvres:—

The aircraft of both kinds are to be employed, as laid down, for the purpose of obtaining information before and during a battle. Their employment in no way lessens the rôle of the cavalry, or of the troops employed in the service of security; it is, moreover, not possible to make use of the aircraft at all times.

RULES FOR EMPLOYMENT.—*Dirigibles*, minimum altitude 1,000 metres (1,100 feet); *aeroplanes*, 500 metres (550 feet), when within the zone of the enemy. Cantonments very far in rear of the front. Any aeroplane surprised at a height of less than 200 metres (220 feet) above a hostile body

France—continued.

will be put out of action, and must land. It will not be left out of action more than 24 hours.

The aircraft must not approach each other within a horizontal distance of less than 500 metres (550 feet).

Aeroplanes will give way to dirigibles; the latter must keep their course.

Aeroplanes meeting pass to their right; they leave aeroplanes travelling in the same direction as themselves on their right.

It is forbidden for aircraft to manoeuvre over one another.

As regards the military value of the services rendered, General Bonneau is reported in the *Matin* to have spoken as follows:—

"It is the infallible look which one plunges into the enemy's position which permits one to see all that is going on. Yesterday, thanks to my four aviators, I was able to discover in the greatest detail where each of the enemy's artillery positions was situated. All his corps artillery was carefully concealed at the bottom of a small ravine, behind a wood. No cavalry in the world could have located it there, but the aeroplanes found it in the space of a few minutes."

It may be added that aeroplanes usually observed the enemy from a height of 2,000 feet.

The War Office continues to purchase aeroplanes. During the past month, 10 Blériots (6 monoplanes and 4 biplanes) and 5 machines with 3 planes, and capable of carrying 661 lbs. at a speed of 56 miles have been taken over by the military authorities.

According to press reports, M. Voisin has designed a military triplane which has successfully passed its first trials.

AVIATION IN MAROCCO.—Bregé, who has been carrying out some trial aeroplane flights near Casablanca, left Rabat at 5.39 a.m. on Sept. 19th, and reached Mequinez (181 miles) at 7 a.m. He reached Fez on the following day. One passenger was carried; the machine used was a double Breguet monoplane.

SUBMARINES AND AEROPLANES.

Some very interesting experiments have just been carried out in Cherbourg, to test the capabilities of an aeroplane in detecting and locating submarine craft. The aviator who flew the machine in these tests was Aubrun, the well-known champion, who volunteered to give his services, saying that he was convinced that he could sight a submarine even when submerged at some depth from the surface. The machine he used was a Deperdussin. A series of experiments was organized in which two torpedo-boats and two submarines took part, as well as a steam tug designed to take the aeroplane. All the trials took place on one day, with a light wind and calm sea, and comprised two different sets of experiments. In the first set, the aviator was told the approximate location of the submarines. Aubrun had no difficulty whatever in locating the first submarine, which was partly out of the water. On the approach of the aeroplane it plunged and disappeared. The aviator then went in search of the second submarine and located it under water at a distance of about two miles from the first. During these trials, which took place about three miles out at sea, Aubrun rose first to 500 feet and then flew at a thousand to twelve hundred feet. The second trial was more difficult,

France—continued.

but led to complete success. In this case no indication whatever was given as to the location of the submarines, which were submerged under water. Aubrun made a fresh start from the ground and then rose to a height of about one thousand feet, sailing in large circles of 1,500 to 1,800 feet diameter over the sea. The sun was very low by this time, making it harder to view the sea bottom. Before long Aubrun discovered the light reflected from a periscope, and after that it was a comparatively easy matter to locate the submarine, which appeared as a black mass moving at about 20 feet depth. Aubrun then returned to the ground after having been up about twenty minutes. It appears to be now beyond question that an aeroplane flying as high as 3,000 feet from the earth can detect a submarine, while on the other hand the periscope of a submarine will not give a recognizable image of a flying machine at more than 1,500 feet. However, it is not altogether an easy matter to locate a submarine when the aeroplane is flying high, and the pilot must be specially trained for this work. In view of the very favourable results obtained so far it is intended to continue the trials which have been begun. For the purpose of locating submarines and torpedo-boats probably a rather slow aeroplane flying at about 50 miles an hour is quite sufficient. On the other hand for scouting purposes a very rapid flyer is needed. What is particularly wanted at the present juncture is a set of manoeuvres in searching for submarines lying at a depth of 60 to 100 feet under water, the aeroplane flying at different heights, and under conditions both of still water and rough seas. Floating mines also are to be searched for, and combined manoeuvres, in which battleships, torpedoes, submarines, and aeroplanes take part should form part of the programme. When the aviator has discovered a submarine, he discloses its location to a torpedo-boat by dropping a buoy into the water.

Scientific American.

GERMANY.

AIRCRAFT AT MANŒUVRES.—Both airships and aeroplanes were employed at the Imperial Manœuvres in September. The reports furnished by the aeroplanes are said to have been most valuable; the Kaiser decorated both pilots and observing officers at the conclusion of the manœuvres.

DESTRUCTION OF THE "M.III."—The M.III" (Military III) an army dirigible of the semi-rigid type, met with an accident on the 13th of September, and was partially burnt; the reconstruction of the vessel is being proceeded with.

FATAL ACCIDENT.—During the flying meeting at Johannistal (Sept. 29th), Captain Engelhardt, one of the most experienced of the German officer aviators, fell from a height of a hundred feet, and received injuries from which he died.

FOREIGN PERIODICALS.

NOTE.—The Contents of Foreign Periodicals for September will be given, together with those for October, in the November number of the JOURNAL.

NOTICES OF BOOKS.

A History of the Services of the 17th (the Leicestershire) Regiment, containing an account of the formation of the Regiment in 1688, and of its subsequent services, revised and continued to 1910. By Lieut.-Colonel E. A. H. WEBB (formerly of the Regiment). London: Vacher & Sons, Limited, Westminster House, Great Smith Street, S.W.

This handsome volume, embellished with many illustrations and plates of great historical value and interest, is founded upon and continued from the work of Richard Cannon, who, in the early years of Queen Victoria's reign, compiled a series of Historical Records of the old Regiments of the British Royal Army, of which the Leicestershire is one of the oldest. It was one of twelve regiments raised in the autumn of 1688 by the unlucky Stuart King James II. to oppose the invasion of the Prince of Orange, and with its companions it served only to swell the ranks of that monarch's enemies. It was despatched by its new master by sea to Ireland with other troops to effect the relief of Londonderry, but returned *re infecta*, for which failure its first colonel, Solomon Richards, was deprived of his command, though he was afterwards exonerated as having acted only under orders from his superior officers. The Regiment received its baptism of fire in Flanders, where it took part in the famous assault on the outworks of the citadel of Namur. Colonel Webb speaks of a discrepancy between the dates of the siege and the assault, but the siege lasted over many days, and the date to which he takes exception probably refers to the opening of the trenches. In the assault "Colonel Courthope was killed, Lieut.-Colonel Sir Matthew Bridges severely wounded, and 11 officers and 250 soldiers of the regiments were put *hors de combat* in a few minutes." Here "regiments" appears to be a misprint for "regiment." After the Peace of Ryswick, the Regiment returned to England. At that time death was the penalty for desertion, even in time of peace. Four soldiers of the Regiment being sentenced to death for that crime, Queen Mary, who was then Regent, was graciously pleased to decree that only one of the four should suffer the death penalty, the choice being made by "casting lotts." Another soldier convicted of attempting to desert was sentenced "to Runn the Gauntlett five times through 600 men, with two days intermission 'twixt each time of running."

The Regiment again proceeded to Flanders in Marlborough's army, but was soon transferred to Spain, and was engaged in the fatal battle of Almanza. Cannon, in his Record, states that it was among the regiments that surrendered to the foe on that occasion, but Colonel Webb proves this statement to be erroneous: it suffered heavy losses in killed, wounded, and prisoners, but it made good its retreat from the field. After the war it was brought home, and served in garrison in England, Ireland, and Scotland, where it was engaged in the doubtful battle of Sheriffmuir under its own colonel, General Wightman, who commanded the victorious centre of the royal army. In 1725, it embarked for Minorca, and remained in garrison at Port Mahon for twenty-four years! It returned to Ireland

in 1749. In 1751 great alterations were made in the Army, the colours and uniforms being for the first time regulated by authority, and the regiments received numerical titles, our corps becoming the Seventeenth Foot. Previously all regiments had been known by the names of their colonels, but as these appointments were held for life, the title was not changed so frequently as might be supposed. The companies in the regiment similarly went by the name of their captains. The colonel was charged with the pay, clothing, and equipment of the men, being "held responsible in his fortune and his character for the supplies of his regiment." But some colonels were of such a character that they made a fortune out of what they supplied to their regiment.

In 1757 the Seven Years' War broke out, and the 17th Foot was sent to Halifax in Nova Scotia. It formed part of Major-General Wolfe's Brigade at the siege of Louisburg, where the grenadier companies of all the regiments serving in the siege were assembled in a provisional battalion which gained fame under the name of the Louisburg Grenadiers. After the capture of the fortress, the Regiment was transferred to Boston to join the force assembled under General Amherst for the expedition against the French forts at Crown Point and Ticonderoga. Colonel Webb surmises that the Grenadier company of the 17th still formed part of the Louisburg Grenadiers when Wolfe fell gloriously at their head on the Plains of Abraham: but in his statement on page 46 the 17th is mentioned as one of the regiments whose grenadier and light companies were assembled to form "flank battalions" for General Amherst's army.

And it seems more probable that the grenadier company would have rejoined the regiment when it was transferred to another command in a different sphere of operations. Moreover, the return of Lord Amherst's force, dated 15th December, 1759, three months after Wolfe's death, shows the whole ten companies of the 17th quartered at Fort George and Ticonderoga. The portrait of General Wolfe by Gainsborough forms the frontispiece of this volume, and Plate 5 gives a representation of the Louisburg Medal, which was granted to general officers and to others who had distinguished themselves in the siege. It is curious to observe that in this plate the Union Jack engraved on the obverse has the saltire of St. Patrick, which was not added to the flag until the union of Ireland with Great Britain, forty years after the medal was struck.

After the final conquest of Canada the Regiment served in the West Indies, and was present at the capture of the Moro Fort and the city of Havannah. At the termination of the Seven Years' War it returned to North America, and was engaged in a series of little wars against the Red Indian tribes on our frontiers. After its return to England the light company, which had been a formation improvised in the American wars, was authorized as a permanent addition to the establishment. In 1775 the 17th Foot again embarked for North America to suppress the revolt of our Colonies, was engaged in the battles of Long Island, Whiteplains, and Brandywine, and surrendered with Lord Cornwallis to the French and Americans at Yorktown. It returned to England with its ranks so depleted that at the annual general's inspection in 1788 no drill could be performed, the regiment being composed almost entirely of recruits. It is curious to read how troops were quartered in England throughout the Eighteenth Century, the companies of a regiment being scattered over half a dozen towns and villages. When the war of the French Revolution broke out, the flank companies of the 17th were despatched to the West Indies to effect the conquest of the French islands, and the

regiment followed them two years later. On its return to England in 1798 it was stationed at Leicester, having been made the County Regiment in 1782, and a second battalion was added to it. Both battalions shortly afterwards embarked for the Helder with the army commanded by the Duke of York.

Suvarov was sweeping the French armies from the face of Italy, and the moment was thought favourable for a combined British and Russian Expedition to Holland to free that country from the yoke of Republican France. But the Dutch did not want to be freed, and assisted the French against the invaders. After losing many men and all its regimental books and records the 17th returned to Dover, and in three months more both battalions embarked for Minorca. The Regiment to a man volunteered for Egypt, but it was not so fortunate as to form part of "the force with which Abercromby beat the French under Kleber, near Alexandria"; but either Richard Cannon or Colonel Webb is mistaken here: Kleber had been assassinated before the English landed in Egypt. After serving as marines on board the fleet, the Regiment returned to England at the Peace of Amiens, when the second battalion was disbanded. After a year at home the 17th embarked for the East Indies, travelled in boats up the Ganges from Calcutta to Cawnpore, and for the next twenty years was employed in fighting Mahrattas in Central India, and Gurkhas in Nepaul, hunting down bands of marauding Pindaris, and reducing the fortresses of refractory rajahs. In 1821 the band and two companies of the Regiment attended the funeral of the Nawab Nazim of Bengal at Murshidabah, whose dynasty is here erroneously alluded to as Nizam's. This is the first mention of the institution of a regimental band. For the first century of its existence the Regiment seems to have had no music but drums; only the grenadier company had fifers as well as drummers. Among the coloured plates are two showing the uniforms of the drum-major and a musician in 1830; white coats with gold epaulettes and braid, and red trousers; the former wears a huge bearskin cap, and the latter a broad-topped shako with a tall red plume. It was the custom at the time to dress bandsmen in fantastic costumes devised by the fancy of the colonel or the band committee, and some of these costumes were retained in the Footguards up to the time of the Crimean War.

For its long and meritorious services in India King George the Fourth granted to the Regiment the badge of the Royal Tiger,¹ with the word "Hindoostan" superscribed.

After seven years' home service it again proceeded abroad, and remained absent for sixteen years, first serving as a convict guard in New South Wales, then in India in Scinde and Afghanistan, where it was at the storming of Ghuznee and Kelat, took part in the now almost forgotten Southern Mahratta campaign of 1844, and garrisoned Aden on its first occupation by the British. After another spell of seven years at home it went to the Crimea, and served in the siege of Sebastopol, and took part in the assaults on the Redan. From thence it went straight to Canada, and in 1858 a second battalion was raised for it in England on the augmentation of the army necessitated by the Indian Mutiny. From this time forward the history becomes more complicated, having to follow the various fortunes of the two battalions in different quarters of the globe.

¹ The tiger was called royal to distinguish it from leopards, panthers, *et hoc genus omne*, to which the name of tiger was formerly commonly applied.

The 1st Battalion took part in the Second Afghan War: the 2nd Battalion was in the third Burmese War. The 1st Battalion was engaged throughout the South African War, and was in Ladysmith during the siege, while the 2nd Battalion was doing garrison duty in Egypt. The history is brought down to the 31st December, 1910.

This book is a model of what a Regimental History should be. It is clear and precise, and at the same time contains full information as to the movements and formations of the Regiment, lists of its officers, rates of pay, orders affecting it or recognizing its services, etc.; and this fulness of detail has been attained in spite of the total loss of the regimental books and records on two occasions, once in the Helder campaign, and once in the wreck of the transport "Hannah," on the voyage from Karachi to Bombay. Colonel Webb and the Regiment may be equally congratulated on the execution of this excellent history. The arrangement of the subject matter in separate sections for every year is convenient for reference, and makes the table of contents an index to the events recorded. There is also an index of words at the end of the book. A separate chapter treats of the dress and equipment of the Regiment, and there are many full-page coloured plates showing the dress worn by officers and soldiers at various epochs. Military costume certainly does not seem to have improved with the successive alterations made in it. The earliest regimentals were only the civilian dress of the period of a uniform cut and colour. That of our Regiment was grey with red facings, soon changed to red with grey facings and white lace. The officers' lace was silver, and in later times had a black stripe in it, the origin of which is unknown, though a legend attributes it to mourning for the death of General Wolfe. The pattern of the lace was changed when so many needless and useless changes were introduced into our army in 1881, and as the new pattern did not admit of the black stripe being inserted in the middle, it now borders the lace. Colonel Webb seems to think that the hatchets of the Grenadiers were used as battleaxes, but they were only intended for hewing down the wooden palisades which then invariably obstructed the approaches to a fortress. When the hatchets were taken away from the Grenadiers they were given to a squad of Pioneers, and for this reason perhaps Pioneers were often dressed like Grenadiers until quite recent times. Colonel Webb says that during the reign of Queen Anne Grenadiers ceased to carry hand-grenades. In the plates showing the dress for a Grenadier in 1751 and in 1768 respectively, the brass tube which was used for carrying the fuse to light the grenade is still worn on the shoulder-belt; but this was probably retained merely as an ornament, as it was by some Grenadier corps in Continental armies, even as late as the early Nineteenth Century. The volume further contains portraits of officers, including that of the present Colonel, Major-General Utterson, C.B., pictures of battle-scenes in which the Regiment was engaged, and a great number of engravings, showing badges, buttons, and shako-plates, breast-plates, and waist-plates worn by the officers at different times. Though these plates had to conform to an authorized pattern, their ornamentation was often varied by the taste and fancy of the regimental authorities, and some of them were real triumphs of the goldsmith's or silversmith's art, the design and craftsmanship of which are well worth reproducing here. There are also two full-page coloured plates of the colours of the Regiment in 1848 and 1910. The tiger depicted on the regimental colour is green, with gold stripes. The origin of this peculiar and unnatural colouring is lost in obscurity: it has been variously attributed to the imitation of a badge of Tippu Sultan's,

or of a device borne upon a flag captured from the Gurkhas in the Nepal War, or from the Arab mercenaries in the pay of Appa Sahib at Nagpore. Anyhow, the verdant tiger had gladdened the eyes of the Leicesters for many years, when one day a new pair of colours was received, in which, to the surprise and consternation of all ranks, their tiger was represented no longer as green, but as "proper." However, the Regiment appealed to the Army Council, and King Edward VII. was graciously pleased to order that the "Green Tiger" should be restored to the colours of the Leicestershire Regiment.

An appendix contains the names of the twenty-six colonels of the Regiment from 1683 to 1910, with biographical sketches of their careers and services: also a vindication of Colonel Solomon Richards from the charge brought against him of neglecting to relieve the town of Londonderry, with all the correspondence relating to the case, reports of debates in the House of Commons and proceedings of the Committee of Inquiry. Colonel Richards, who was an old soldier of Cromwell's ever-victorious army, was at his death honoured with a tomb in the North Cloister of Westminster Abbey. Another appendix contains the despatch of General Wightman, another colonel of the Regiment, on the Battle of Sheriffmuir. Yet another describes in detail the plate, pictures, trophies, and medals in the possession of the officers' and sergeants' messes of both battalions, and this very complete Regimental Record concludes with an account of the marches and other tunes played by the band according to custom or authority.

The list of Errata is very small, but it has not included the misprint of Gratton for Grattan in the table of contents (page xxiii.).

The Campaign of Gettysburg. By "Miles." London: Forster, Groom & Co., Ltd., 15, Charing Cross, S.W.

This book contains a full account of the operations of the Federal Army of the Potomac, and the Confederate Army of Northern Virginia during the brief summer campaign of 1863, when General Lee's daring and ably planned invasion of Pennsylvania was brought to a fruitless termination in the great and indecisive battle of Gettysburg. Like the battle of the Nations at Leipzig, the conflict raged for three days, a sufficiently long trial of nerve and endurance for the troops engaged, though the Russo-Japanese War has since provided us with examples of battles protracted over more than a week. It was also the turning point of the American Civil War, for it was the last desperate effort of the Southern leaders to carry the war into the enemy's country, and with its failure ended all hope of their ultimate success; they were able to protract the struggle for two years longer, but they were never again in a condition to resume the offensive.

The book opens with a review of the military situation, and of the strength, composition, and character of the two armies, which lay facing each other across the river Rappahannock: the Federal Army under General Hooker, threatening an advance on Richmond; the Confederate Army under General Lee barring his path. Early in the spring, Hooker had crossed the river, and had been badly beaten by Lee at Chancellorsville, though the Confederate victory was dearly purchased by the death of Stonewall Jackson. The war had already lasted two years, and the resources of the Slave States in men and money were showing

signs of exhaustion; their strong fortress of Vicksburg controlling the navigation of the Mississippi was closely besieged by General Grant, and must fall unless relieved by a timely diversion. Under these circumstances, General Lee conceived a plan for striking a decisive blow by carrying the war into the Northern States and capturing the Federal Capital at Washington. He left one Army Corps to bluff Hooker on the Rappahannock, and with the main body of his army marched rapidly westwards, turned north up the Shenandoah Valley, where he fell like a thunderbolt on the Federal garrisons, capturing or destroying them, and crossed the upper waters of the Potomac, eastwards into Pennsylvania, laying the towns under contribution and sweeping up horses, cattle, and stores of all kinds for the use of his army. All this time his movements were so effectually covered by Stuart's cavalry on the right flank of his march, that his enemy was kept in complete ignorance of his progress and his intentions. Our author thus describes the situation in a passage, which is a fair example of his style and matter.

"It would be difficult to find a more striking illustration of the moral effect in war of a bold strategic movement, skilfully veiled by a powerful force of cavalry, and of the bewilderment produced in the mind of an enemy by such a movement, than is afforded by a study of the telegrams that passed between Hooker and Washington during these six days. Neither Halleck nor Hooker knew where Lee's army was, nor what his intentions were. There is an element of humour in the way in which each accuses the other of withholding information, the truth being that each was equally ignorant. The whole of Pennsylvania was in a tumult, the wildest reports coming from that quarter. No one knew Lee's real strength, or whether he meant to invade Pennsylvania, or to attack Washington. And the cause of all this mystery and confusion was the admirable way in which Stuart had done his work, in spite of the persistent efforts of Pleasanton¹ to break through the veil, and see what was behind. On the 21st we find Hooker writing to Halleck: 'This cavalry force has hitherto prevented me from obtaining satisfactory information as to the whereabouts of the enemy. They have masked all their movements.' Such words from the mouth of the enemy constitute the highest praise that can be given of the manner in which Stuart had fulfilled his task."

But the tables were soon turned. Lee was in the habit of allowing his subordinates considerable latitude in their interpretation of his orders, and when he ordered Stuart to rejoin the Army, the latter took upon himself to do it by a most circuitous route, passing round the flanks and rear of the Federal Army, which was now marching northward in hot haste from the Rappahannock to intervene between the capital and the enemy. Lee was thus unable to obtain accurate information of the Federal movements, and Stuart never received Lee's order to concentrate at Gettysburg, and took a wrong direction, only rejoining at Gettysburg on the second day of the battle with his horses and men knocked up by continuous forced marching. Meanwhile, in spite of President Lincoln's objection to "swapping horses when crossing a stream," General Hooker, who was "hampered by his Government, disliked by his officers, and distrusted by his men," was replaced in the command of the Army of the Potomac by one of his Corps Commanders, the slow and cautious Meade. This made the sixth change in the command of the army since the com-

¹ The Federal Cavalry Commander.

mentement of the war two years previously. President Lincoln's choice of Generals reminds one rather of the German story of "Hans in luck," who exchanged his horse for a cow, his cow for a sheep, his sheep for a pig, and his pig for a goose. Lincoln replaced McDowell by McClellan, McClellan by Pope, Pope by Burnside, and Burnside by "Fighting Joe Hooker," Hooker by Meade, and if Meade's successor Grant had not stipulated for a free hand in the conduct of the war, it might not have been finished yet. Had McClellan been left in command, and left alone by the Government, he would have brought the war to a conclusion in less time than Grant, and with a lesser expenditure of blood and treasure.

The advanced troops of Lee's army arriving at Gettysburg on 1st July, found the First and Eleventh Army Corps of the Federal Army already in occupation of the town. In the promiscuous battle which followed the Federals were routed and driven out of Gettysburg: the Eleventh Corps was practically annihilated, the First Corps lost half its numbers. The remnant rallied on the strong position of Cemetery Hill, south of the town, where they were joined by the rest of the army, five *Corps d'Armées* hurrying up in quick succession to the sound of the guns. Meade took up a naturally strong position, which he proceeded to make stronger by entrenchments and abattis, forming a salient angle towards Gettysburg, and awaited the attack of the enemy. Longstreet, Lee's ablest Corps Commander, and his right-hand man since Stonewall Jackson's death, pronounced the position impregnable, and advised Lee to draw the defenders into the open field by turning it and making a feint on Washington; but Lee, having at the moment no cavalry, and confident in the valour of his troops, determined to storm the position. Like the Duke of Cumberland at Fontenoy, he attacked a superior force in a strongly entrenched position, and with the same result. The attack might possibly have succeeded but for the want of zeal and alacrity on the part of Longstreet, who hesitated to sacrifice his troops in what he considered a foolhardy and hopeless attempt, and the lack of cohesion and co-operation between the attacking corps on a position more than four miles in extent. After two days of mutual carnage the battle remained drawn. "Lee had fought his army almost to the last man in his determination to secure victory. But no man can command success, and if the task that he demanded of his troops was too much even for them, yet the slaughter that they inflicted on the enemy was so great that the battle only ended finally with the mutual exhaustion of both combatants."

Lee was now in a most critical position with the unbeaten Union Army between him and his base, but he extricated himself from it with his usual ability, and made a masterly retreat. Meade followed on his tracks, and even overtook him, but did not venture to attack. He picked up 500 stragglers and three guns which had stuck in the mud—the only guns lost by the Confederates during the campaign, while the only colours which they lost were those which were left within the Federal works at Gettysburg. The two armies once more faced each other across the Rapahannock. "Thus the campaign came to an end within a few miles of the locality which had witnessed its opening scene six weeks before."

This book is a model of what a military history should be—clear, precise, and accurate in matters of detail. The writer wastes no time or space in digressions into politics or in digressions into the general history of the war. His criticisms of the conduct of the campaign by the opposing commanders are just and fair; his estimate of the causes of

the success or failure of the various operations seems to us to be well-founded, and his comments are informing and instructive. From the perusal of this book the expert in the sciences of strategy may derive much pleasure, and the tyro much profit. The type is clear, and the divisions of the chapters into sections with sub-headings make reference easy. There are three excellent maps, one of the general theatre of the campaign, one of the battlefield of the 1st July, showing the positions of the contending forces; and another of the Federal position and the Confederate order of battle on the 2nd and 3rd July.

Bateaux sousmarins à grande vitesse sous l'eau. (Submarines with a high speed when submerged) by C. del. Proposto. Brussels, 1910. Imprimerie Moderne.

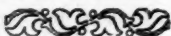
The problem which the author, a well-known expert, has set himself to consider is to design a submarine which shall possess such a speed when submerged as to put it on a footing of comparative equality with floating ships.

The type of vessel designed by M. del. Proposto is to have a length of 168 ft., a beam of 16 ft., and a displacement of from 435 to 580 tons. The maximum speed will be 16.6 knots when submerged, and 16.45 knots on the surface. This increase in speed is gained by what the author proves mathematically to be the only practicable method, viz., the reduction of the weight of the propelling machinery.

In M. del. Proposto's design, electrical propulsion has been entirely eliminated. The submarine is driven by a Diesel motor and a compressed air engine. When running on the surface the Diesel motor drives the vessel, and, at the same time, compresses air in a reservoir; when moving submerged the air stored up in this way is used both for the motor and for the compressed air engine, which is then brought into play; the difficulties arising from loss of weight of the fuel expended, and from the resistance of the water to the discharge of the products of combustion have been foreseen and provided for.

The track of the motor-driven submarine would, of course, be clearly marked on the surface by bubbles and disturbed water. This defect has not been lost sight of; it is proposed, when it is especially important to elude observation, to work the submarine with compressed air alone, the air discharged from the engine being retained within the vessel. The author calculates that, in this way, 19.8 nautical miles could be traversed at a speed of 2.8 knots, or 10.7 miles at 3.6 knots with complete invisibility before the pressure of air in the submarine would amount to three atmospheres, a pressure which, he considers, would not be seriously injurious to the health of the crew.

It will be seen from the above outline, that the design proposed by M. del. Proposto, is a somewhat bold departure from previous systems. Nevertheless, it is a design in which every step has been carefully weighed and considered, and every conclusion supported by calculations. Whether the undeniably heavy sacrifice of invisibility when travelling submerged outweighs the corresponding gain in speed, is a matter on which it would be better to reserve judgment till the reports of practical trials are available.



RECENT PUBLICATIONS OF MILITARY INTEREST.

COMPILED BY THE GENERAL STAFF, WAR OFFICE.

JULY, 1911. PUBLISHED QUARTERLY.

PART II*. SECTION I. HISTORICAL—*continued.*

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STRATEGY AND TACTICS.

Movements to a Flank in Connection with the Enormous Armies of To-day. (Flankenbewegung und Massenheer.) By General Freiherr v. Falkenhausen. 203 pp., with 4 maps and 3 appendices. 8vo. Berlin, 1911. Mittler. 8s.

In this work General v. Falkenhausen, the gifted author of "Der grosse Krieg der Jetztzeit," continues his study of the problems involved in the handling of the enormous armies of the present day. His aim in this his latest work is to study the application of the underlying principle of the battle of Leuthen to modern conditions, and to ascertain whether it would not be possible for a numerically inferior force to defeat a superior force by the employment of a grand flank march culminating in an attack in mass on the exposed hostile flank.

The general idea runs as follows:—

"The Blue (eastern) Armies have withdrawn from their positions of strategical deployment before the enveloping march of superior Red (western) Armies, and have taken up a line with their right wing on Mainz and their left wing withdrawn past Ulm to the line of the Main.

"The Red Armies have followed up this retirement with their right wing through Mülhausen and southern Germany, and their left wing through Luxemburg and along the Mosel.

"Blue is operating in his own country."

The author next gives a rough outline of the movements of the Red and Blue Armies from the middle of May till 5th June, on which date the opponents are facing each other at a distance of 70 to 90 miles. The general situation does not favour a counterstroke from the Blue right wing, the peculiarly irregular course of the Main is equally unsuitable as a defensive line, so that, short of withdrawing still further east, the only solution lies in a flank march to the left ending in a decisive blow against the Red right wing.

* The titles of all books are given in English: this does not indicate that the books have been translated. The original title in the language in which a work is written, if not in English is given in brackets.

A glance at Map No. 2 will give some idea of the difficulties which arise in connection with this operation; the map represents a remarkable picture of crossings of columns, lateral displacements of Army Corps, and a grand right wheel.

The course of events is, of course, only given in comparatively broad outline, but the amount of material furnished by the author for each day affords an ample basis on which students may work out the operations in detail. The work is eminently adapted to the study of technique of higher leadership, and provides innumerable situations suitable for problems in leadership of every kind.

The book is accompanied by excellent maps which clearly show the positions of the various corps from day to day, and by appendices giving similar information in tabular form.

Modern Tactics. According to Experiences in the Russo-Japanese War. (Neuzeitliche Taktik. Nach den Erfahrungen des Japanisch-Russischen Krieges.) By General von Lignitz. 103 pp. 8vo. Berlin, 1911. Vossische Buchhandlung. 3s. 6d.

General von Lignitz is the author of "The Russo-Japanese War," a four-volume work.¹ In a preface to the work under review he states that in the course of an historical narrative he could not deal fully with the many new factors which the war brought to light, and has therefore devoted a separate volume to them.

The book is divided into parts dealing respectively with:—

- I.—New warlike appliances.
- II.—The different arms in the Russo-Japanese War.
- III.—The modern battle.
- IV.—Night operations.
- V.—Peace preparation.

Part I comprises considerations on hand-grenades, machine-guns, air craft, motor vehicles, railways and light railways, replenishment of *personnel*, ammunition, and supplies. In the case of grenades an historical sketch showing their development is followed by a description of the different patterns used in the last war. The method of carrying them is explained, and their known and probable effects considered. When discussing machine guns the author proposes the incorporation of two of these weapons in a horse battery, with four field pieces. He speculates as to the probable effect that air craft would have had on the operations in the Crimean, Franco-German, and Russo-Japanese wars. As reconnaissance media he considers them to be—up to the present—inferior to horses, but believes in the feasibility of dropping projectiles from them. He suggests that guns in the open should be protected against these projectiles by flexible screens of wire netting, but does not refer to difficulties attending this proposal. After alluding to the limitations imposed upon motor traffic by roads and climate he gives figures as to the metalled road system in various European countries. Whilst pointing out the disadvantages of motor cycles he pronounces in favour of a bicycle for orderly work, and of light two-seated cars for dis-

¹ The second volume was reviewed in R.P.M.I., July, 1909; the third in April, 1910; the fourth in April, 1911.

tributing orders and for intercommunication on a wider scale. He describes the system of Russian and Japanese light railways generally, and around the Shaho position, mentions the withdrawal by rail of some Russian troops at Mukden almost in face of Nogi's Army, and points out the utility of railways in connection with heavy artillery ammunition supply.

Field kitchens and field bakeries are characterized as suitable—generally speaking—for defensive and position warfare only.

In the second part he draws attention, when discussing infantry tactics, to the absence of sealed-pattern attack formations amongst the Japanese, whilst noticing the tendency to extend the front which manifested itself as the campaign progressed.

In the case of the cavalry he enumerates its principal exploits on each side. The absence of pursuit by the Japanese is ascribed to:—badly-horsed artillery, numerically insufficient cavalry, the fact that infantry packs had been left behind before going into action, and exhaustion. He points out how few instances of energetic pursuit are furnished by military history, citing that of the Prussians after Waterloo as the best by comparison.

He gives details of engineer formations on both sides, and prefers the Japanese organization (a 3-company battalion to a division) to the Russian (a 4-company battalion to an army corps).

The part entitled "The modern battle" contains a discussion on the difficulty of placing and employing reserves, since, although electrical communications enable the Commander-in-Chief to keep in touch with events happening along a wide front, yet the distance which reserves moving behind the line must cover is not thereby shortened. He points out the danger of out-flanking manœuvres initiated from the battle-front, instead of by concentric marches from a distance. At Liao-yang Kuroki's Army would, he considers, have suffered a catastrophe if Kuropatkin had resolutely carried through his plan.

To guard against being outflanked in turn, an outflanking force should advance by échelons from the outer flank. The body on the extreme flank should be strong in cavalry, this arm to be ordered to attack hostile reserves with its artillery and by means of dismounted action. Several pages are devoted to a discussion of offensive and defensive tactics and the occupation and entrenching of positions. The author advocates works suitable for a garrison of about 250 rifles, covered by wire entanglements and mutually supporting. Of trenches constructed during an attack he says that only good troops can be "dragged forward" out of these.

Regarding communications behind the battlefield, he calls attention to the possibility on occasions of moving considerable numbers by means of motors. The Staff must ensure that parallel and perpendicular roads in rear of the battle-front are kept in fit condition for heavy traffic, and that such roads are known to all concerned.

Of approach marches he says that near the enemy one division on one road is the maximum dispersion admissible, having in view the possible necessity of an unsupported column carrying on a fight of several hours' duration.

Of artillery support in an infantry attack he speaks as follows:—

"Some batteries absolutely must accompany an attack in order to support it directly and form a rallying point for retreating skirmishers. The loss of their pieces must be risked. When teams are shot, guns must be man-handled. It may be advantageous to place (supporting) guns in a skirmishing line as was done in the Seven Years' War (Battalion guns) . . . Ammunition must be brought up by hand. It matters not so much whether fire be kept up as that some be delivered (moral effect)."

Of infantry attacks he says that Napoleon's big simultaneous advances were replaced in 1870-71 and 1904-05 by small disjointed and costly attacks. He thinks it would be possible to deliver a concerted attack by 12 Army Corps on a front of 40 to 50 kilometres (25 to 30 miles). To a force of such strength he would give a reserve of four Army Corps. "The nerves of most men are only good for a one-day fight," says he, "but more will be required. Natural weaknesses must be counteracted by training and the warlike energy of leaders." He cites approvingly General Oku's order that a body which sees others on its flanks retreating must hold its ground, and points out the difference between this and the Russian practice in the same war.

On pp. 62-63 he advances arguments for Napoleon's "penetration" tactics, but admits that they require very good troops. The following is worth quoting: "In most armies reservists will form a majority (of infantry units). . . . Their commonest task will be to advance by rushes over 1,500 yards or so under heavy shell and musketry fire, . . . then comes lying down and entrenching, or a fight with bayonet and hand-grenade . . . moments will come when everything depends upon the regimental officer . . . less on his tactical knowledge than on his example and tenacity; . . . that side will win whose officers prove of superior worth in a crisis. . . . The Japanese kept reserve formations behind as long as possible, but these, too, had an optical effect" (since the Russians saw them, but did not know to what category they belonged).

The following, too, is worthy of special attention in our service. "The numerous panics amongst the Russians in the Manchurian war would perhaps have been less widespread had the Russians not sent back their colours; the colour should be where the bulk of the fighting unit is, colours can be lost as honourably as can guns."

Three instances are quoted from Kuropatkin's work, dealing with the battle of Mukden only, where parties of Japanese who were cut off in localities preferred death to capture. With regard to mountain warfare, he calls attention to the fact that hill-tops were used for observation—guns being generally on cols, and infantry sheltered in deep trenches on the exposed slope. Regarding *moral* he remarks that materialistic views of life are the worst possible preparation for modern war with its enhanced requirements.

Speaking of night operations he draws attention to the importance of officers knowing the men who are best adapted for this work and mentions necessary headings for orders (p. 85). The opinion that "troops actually assaulting should be the only ones to cheer" is in contradiction with the Japanese view that *no one* should do so during night attacks. For protection by night he recommends the method adopted by the Japanese since the war, viz.,

to send patrols forward to establish and maintain touch with hostile bivouacs.

He recommends the placing of conspicuous objects at fixed sight distance and of "flares" to be lit if possible on the alarm being given, but by officers only.

He draws attention to the unduly high proportion of (four-fifths in one Army Corps) and poor fighting qualities of Russian reservists. In future wars, he thinks, men over 35 years old should not be incorporated in the field armies.

Under "peace preparations" he draws attention to the need for maintaining physical "condition" in view of the increase of town existence and sedentary occupations; of various exercises cited he considers long-distance running to be of special value for infantry.

With a view to practising higher leaders in conducting "mass armies" he advocates manoeuvres on a large scale with a large proportion of "flagged" units, the proper distances being strictly observed.

Finally he says that their education more than their tactics procured victory for the Japanese.

Finland. *Finnland: Eine Militärgeographische Studie.*) By Colonel Ritter v. Ursyn Pruszyński. 18 pp. Map. 8vo. Vienna, 1910. Karl Prochaska. 1s. 6d.

The author examines Finland as a possible theatre of military operations, and arrives at the conclusion that an enemy will be attracted to the Grand Duchy by its proximity to St. Petersburg. The coast defence of Finland does not present any great difficulties, but the attitude of the population is a very important factor, and at present this is so antagonistic to Russia that if she were to attack some Western Power through Finland, the operations would be as in hostile territory, while an enemy who landed in Finland would find an ally in the Fins.

TRAINING AND EDUCATION.

The Preparation and Conduct of Tactical Rides and Tours on the Ground. By Colonel v. Moser. Translated by the General Staff, War Office. 54 pp., with 3 maps. 8vo. London, 1911. His Majesty's Stationery Office. 1s. 3d.

This is a translation of an instructive article on tactical rides which appeared in the German General Staff Quarterly. The author was an instructor at the German Staff College, and the hints which are given in his article are the result of practical experience. The examples on which the work is based are taken from the final tactical tour of one of the classes of the Staff College in 1909.

The book is divided into two parts; Part I dealing with a tactical tour of seven days' duration, and Part II being devoted to the arrangement and conduct of tactical rides lasting from one to three days.

Problems for the Manœuvre Ground. (Aufgaben auf den Truppenübungsplatz). By Major Immanuel. 128 pp., with 1 map. 8vo. Berlin, 1911. Mittler. 3s. 6d.

In his preface Major Immanuel states that the object of this book is to assist in overcoming the difficulties which beset commanders in framing schemes suitable for their units on the manœuvre ground. The restricted nature of these grounds renders it a difficult task to set novel and instructive schemes for units varying from a company to a brigade of infantry.

In Part I the author touches on the main principles which should regulate the framing and carrying out of tactical exercises, having regard to the conditions which obtain on manœuvre grounds.

Part II contains the problems of which the solutions are to be found in Part III. These problems are ranged under the following headings: Companies, Machine Guns, Battalions, Regiments, and Brigades, and they deal with battle exercises, manœuvre exercises, night operations, and deployment of the larger bodies. There are 120 schemes in all.

Contributions towards the Tactical Training of our Officers. Volume

III. **Tactical Rides.** (Beiträge zur taktischen Ausbildung unserer Offiziere. III. Taktische Uebungsritte.) By Lieut.-Gen. Litzmann, 3rd edition. 156 pp., with 3 maps. 8vo. Berlin, 1911. Eisenschmidt. 3s. 8d.

This is the 3rd edition of Vol. III and forms part of a series of tactical handbooks by the same author. The previous edition was published in 1898, so that the present one has had to be practically re-written.

In the introduction the author dwells on the objects to be aimed at in tactical rides, and points out their advantages and shortcomings. The planning of these rides and such matters as conferences, number of officers participating, duration of ride, selection of daily tasks, etc., are next dealt with. The author is in favour of keeping all the officers on one side in these small rides, and of making them fight against an imaginary enemy whose actions are dictated by the Director. The advantages claimed for this procedure are that it simplifies the task of the Director and saves time, and so enables the details of the handling of small bodies to be thoroughly worked out on the ground.

The author then proceeds to describe the conduct of a five-day tactical ride, but only the second and third days of this ride are gone into in detail, the conduct of the ride during the remaining days being merely sketched in broad outline.



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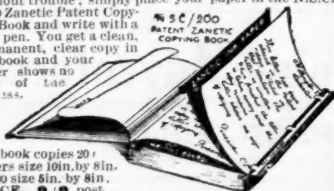
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